A project to

Develop and
Evaluate
Methods to
Promote
Ambulatory Care
Quality

Final Report, Volume 3

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DEMPAQ:
A project to Develop and Evaluate Methods to Promote Ambulatory Care Quality

Final Report, Vol. 3

This report describes the development and evaluation of a set of performance measures designed to assess the quality of care delivered to Medicare beneficiaries. Because this project was a test of a methodology, the results presented in this report should be regarded as preliminary rather than definitive.

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Chapter 1
Summary and Recommendations

Abstract
This chapter summarizes the DEMPAQ Feedback and Education strategy and presents recommendations based on the strategy. The recommendations are listed here and described below:

- Conduct feedback as part of an overall intervention strategy to improve the quality of ambulatory care delivered to Medicare beneficiaries;
- Develop a feedback strategy in close collaboration with local (i.e., state) physician leaders;
- Include a CME workshop as part of the feedback strategy;
- Include self-review as part of the workshop format; and
- Focus feedback materials on a single condition, topic, or aspect of care, as appropriate.

Conduct Feedback as Part of an Overall Quality Improvement Strategy

Beginning in 1990, the DEMPAQ (*D*eveloping and *E*valuating *M*ethods to *P*romote *A*mbulatory care *Q*uality) project developed and evaluated methods for measuring the quality of care given to Medicare beneficiaries in physicians' offices. Two integrated tools to measure quality, a claims profiles and a record review instrument, were tested by the PROs in three states: Maryland, Alabama and Iowa. The process developing these tools was open and interactive, employing a "customer-supplier" dialogue between user and developer, and stressing the development of quality oriented and clinically useful measures.

The DEMPAQ Feedback and Education Phase tested one strategy for intervening with physicians for quality improvement. Our strategy is based on the belief that physicians need to be convinced of the opportunities for improvement. The strategy promotes professional self-examination and assists in a campaign for improvement through educational workshops. Rather than focusing on the performance of individual physicians, the strategy concentrates on providing information about group patterns of practice.

Any intervention needs to be part of a larger quality improvement design. A successful design should have the following components:

Step 1: measurement of performance of a group of physicians;
Step 2: identification of targets for improvement based on the results of the measurement;
Step 3: intervention to change practice; and
Step 4: remeasurement of performance to assess the impact of the intervention.

A variety of interventions are suitable for step 3. Possible interventions may include:

- ***Feedback*** to physicians of group patterns of care;
- ***Office tools*** alerting physicians to the usefulness of specific office systems such as flow sheets, preprinted stickers, "tickler files" and "post-it" note reminders to facilitate appropriate patient care for selected conditions;
- ***Short messages:*** faxes, posters, newsletters, mailed flyers, notices in state medical journals, designed to expose physicians repeatedly to the same simple recommendation for improved patient care presented in different ways in hospital and office settings and medical society meetings;
- ***"Best practices":*** videotaped descriptions of processes of care used by practicing physicians whose quality of care has been judged excellent; and
- ***Public education campaigns*** to inform beneficiaries about guidelines for good practice in an area targeted for improvement.

We selected feedback for the DEMPAQ pilot test of an intervention strategy. The feedback consisted of an integrated continuing medical education (CME) package with the following components:

- A CME workshop;
- A CME workbook; and
- Reports of profiles and patterns of performance based on Medicare claims data and office medical records.

We chose a CME framework for the feedback to encourage physicians to participate in the DEMPAQ project. Physicians invited to participate in the project by submitting records were offered free CME credit. The DEMPAQ CME package was designed to meet both the needs of the project and the requirements of the Accreditation Council for Continuing Medical Education (ACCME) (see Chapter 2).

Develop Feedback Strategy in Close Collaboration with Local Physician Leaders

We worked collaboratively with physicians from state and national medical societies and societies of internal and family medicine (liaison physicians) to design clinically meaningful performance measures. By beginning an interactive relationship with physician groups during the initial development of measures, we reached agreement with collaborating physician groups, from the start, upon performance measures that met their own sense of good practice and that were clinically relevant. As a result, many of the liaison physicians decided that this was a worthy, important project and chose to become involved in the feedback strategy as planning group members and CME workshop faculty (see Chapters 2 and 3, this report).

Acceptance by local physicians is critical to the success of any feedback strategy. As described in Chapter 3 of this report, it is essential that at least one *locally recruited* physician who is a *strong opinion leader* is part of the process. In our experience this opinion leader plays a key role, particularly in the CME workshop. He or she can set the tone for the workshop and remind participants of the purpose of the workshop, if necessary.

Include an Innovative CME Workshop as Part of the Feedback Strategy

The DEMPAQ workshops represent a substantial departure from traditional CME workshops. Usually the selection of CME topics is driven by the interests of the sponsor, and may include research or marketing of drugs or devices, rather than by the assessed needs of the average primary care physician. Our approach bases the workshops on the results of performance measurement.

Workshops were conducted in each of the three study states. The first workshop was held in Baltimore, Maryland, on June 30, 1993. Workshops were held later in Alabama (September 24, 1993), and Iowa (October 27, 1993). In addition, interested physicians could pursue a course of home study. The American Medical Review Research Center coordinated the workshops and issued the CME credits for two of the three workshops and for all three home study courses. The University of Iowa issued credits for the Iowa workshop.

Each workshop was similar in content and format, with some variations. All workshops opened with local physicians introducing the DEMPAQ project and its history. Next the project's structure and criteria development were described. Self-review (instruction and conduct), records results, question and answer period with experts, claims results, and wrap-up discussion followed, although not necessarily in that order (see Chapter 3).

A CME workshop serves several important purposes. First, it is an opportunity for the dissemination of information about practice patterns. Physicians in a state learn about practice variation while receiving Continuing Medical Education credit. Second, physicians learn how performance measures are constructed and how they might make them for themselves. Third, the workshop can be a forum where physicians share patient management strategies and concerns for selected clinical topics. Physicians, particularly those in the fee-for-service setting, often work in relative isolation. The workshop provides the ideal opportunity for physicians to share information. Finally, the workshop is an educational opportunity. During the workshop, attendees learn about desirable ambulatory care management practices from clinical experts and from the workshop materials.

Evaluations conducted by AMRRC indicated that the workshops were very favorably received (see Chapter 3).

Include Self-review as Part of the Feedback

We included a self-review module in our feedback strategy for two reasons: to facilitate adult learning, which proceeds by doing; and to acquaint physicians with the performance criteria. Self-study or self-review can be an important educational tool. The physician proceeds at his or her own pace and becomes actively involved in the learning process. For the self-review we designed an innovative workbook based on adult learning theory (Holcomb and Garner, 1973; Garner and Burch, 1974) which fostered self-directed learning. Although the workbook was primarily designed for use in a special CME workshop, the workbook contained all the necessary instructions to conduct a self-review of quality at home (see Chapter 4 for more information about the workbook).

The second reason for doing self-review is to acquaint the physicians with the DEMPAQ performance measures. When initially presented with the prospect of feedback about their clinical practices, many physicians experience a natural defensive reaction and attack the validity of the criteria. In all workshops, the body language of most of the physicians was tense, hostile, and defensive at the beginning of the self-review. By the end of the self-review period, the atmosphere had changed considerably. The physicians were relaxed and several of them even admitted, "Gee, this is fun," and "This workbook is very helpful."

Once workshop attendees overcame their initial defensive reactions, many were able to see the benefit of the CME self-review workbook. Not only did the book show the specific criteria upon which the aggregate performance results were based, it became a reference document about appropriate ambulatory care guidelines. For certain areas of medical practice, such as abnormal laboratory results follow-up, nationally developed practice guidelines do not exist. In this situation physicians must be able to convince themselves that the criteria and the rationale for the criteria meet their own sense of professional standards.

We recommend that workshops begin with the self-review of office records. This serves to orient the physicians to the CME workbook as a reference document and to establish the validity of the criteria. Once the building blocks have been laid, the workshop agenda should move on to the presentation of aggregate results.

Based on our experience with the defensive reaction at the workshops, we recommend that specially designed teaching cases rather than actual charts be used for self-review. These cases should be constructed to illustrate selected clinical issues. Perhaps the cases could even be typewritten.

Self-review at home appears not to have been as successful as self-review in a workshop setting. Very few of the individuals who had registered for self study actually completed the course. Perhaps the workshop attracted the most motivated individuals. Those who did complete the home study often mentioned their desire for a telephone "hot line" to help answer questions. If self-review at home is to be integrated into a feedback package, it needs refinement to make it easier for the home study participant to complete.

Focus Feedback Materials Disseminated at a Workshop on a Single Condition, Topic, or Aspect of Care, as Appropriate

A common concern of workshop attendees in all three states was that too much material was being presented in one day. Due to limited funding and time for planning, we were able to prepare only a single workshop in each state, and tried to cover all the major aspects of DEMPAQ in one day. For some workshop attendees, this was overwhelming (21% found the workshops too complex).

Alternative strategies for presenting feedback to groups include:

- Lengthen workshop to two days and cover each topic in more detail;
- Divide the material into a series of one-hour lectures or presentations to be disseminated through teleconference during the usual weekly lunch time CME conferences offered by hospitals; and
- Design workshops focused on single areas targeted for improvement.

The general design of the DEMPAQ reports, tables on right-hand pages and text or graphs on the left-hand pages, appears to work well in terms of being informative and educational. Particular improvements to the reports are detailed in Chapters 5 and 6.

Chapter 2
Background and Overview of DEMPAQ Feedback and Education

Abstract
The DEMPAQ project (Developing and Evaluating Methods to Promote Ambulatory Care Quality) has produced measures to assess the quality of primary care physician performance in the office setting. The development process has been open and interactive, employing a "customer-supplier" dialogue between user and developer, and stressing the development of quality oriented and clinically useful measures. In addition, the measures have been evaluated for reliability and validity.

The DEMPAQ performance measures have been designed to be used in feedback to physicians. The DEMPAQ feedback and education phase has tested one strategy for disseminating information about patterns of practice in ambulatory care to physicians. As part of this strategy, prototypical reports based on claims and records data were developed.

DEMPAQ's primary goal has been to educate physicians about the opportunities for improving quality of care. The educational effort centered on groups (with some feedback to individuals of comparisons to peer group) because of the project's philosophy that quality measurement should "move the mean" of group performance rather than seek out "bad apples."

The DEMPAQ CME package was designed to meet both the needs of the project and the requirements of the Accreditation Council for Continuing Medical Education (ACCME). It included a CME workshop, a CME workbook, and reports of performance based on claims and records data.

This chapter provides a brief overview of the DEMPAQ project—philosophy, measure development, and evaluation for those readers who have not perused the *DEMPAQ Final Report*. Following this introduction, a detailed discussion of the history and rationale for the DEMPAQ feedback and education phase is presented. The final portion of the chapter is devoted to a description of the DEMPAQ CME package.

What is DEMPAQ?

DEMPAQ stands for *D*eveloping and *E*valuating *M*ethods to *P*romote *A*mbulatory Care *Q*uality. The project, which uses medical records information and Medicare claims to evaluate the quality of care given to Medicare beneficiaries in physicians' offices, was initiated in the fall of 1990. In funding the project, the Health Care Financing Administration (HCFA) sought to test and evaluate office review techniques that could be used to implement the congressional mandate for office-based review.

A Cooperative Venture

The DEMPAQ project represents a cooperative venture among the Peer Review Organization (PRO), research and physician communities. The Delmarva Foundation for Medical Care, Inc., (DFMC) the PRO for Maryland, has collaborated with researchers at the Harvard School of Public Health, Brandeis University, Johns Hopkins University and Park Nicollet Medical Foundation in Minneapolis, as well as with the PROs in Alabama and Iowa, to design and test quality measurement tools. Joint endeavors such as ours have been described as having significant potential for producing useful results (Nash, 1992).

Physicians have been involved in all phases of the project: development; implementation; and evaluation. Throughout the process, we strove to present the physicians with a clear set of expectations about the goals and objectives of the project. For example, we emphasized that the project's performance measures would ultimately be used by physicians and thus needed to be credible, clinically relevant and actionable.

To develop credible measures, physicians whose performance is reviewed provided input into the development of both the claims and the records tools. Once the tools were developed, the criteria and the clinical rationale for the criteria were critiqued by liaison physicians. Liaison physicians (physicians who worked closely with us over the entire three-year project) were drawn from the national and state branches of the major primary care specialty societies: the American Medical Association; the American Society of Internal Medicine; the American Academy of Family Physicians; the American Osteopathic Association; and the American College of Physicians. Liaison physicians also tested the validity of the criteria. In other words, rather than developing a computerized "black box" whose inner workings were concealed, our "box" had no lid; it was open to physician scrutiny.

Two Complementary Tools: Claims and Records

DEMPAQ developed two complementary quality measurement tools—claims profiles and record reports. The sources of data for the tools are the Medicare claims and the physician office medical records of Medicare patients. These data sources are complementary; each has advantages and disadvantages. Claims cover care in all settings: in-hospital; ambulatory; skilled nursing facilities; and others. Much of what the Medicare claims lack—clinical detail and information about drug prescriptions—the office record provides. The office record gives an in-depth or magnified view of a patient's care. While the record gives a close-up view of medical care, these data are more expensive to collect than claims data and require intrusion into a physician's office.

The claims reports consist of two types of physician practice profiles: office practice and condition-specific. The office practice profile summarizes characteristics of the physician's case load, e.g., the breakdown of primary versus nonprimary patients, primary patient characteristics and measures of service use. The condition-specific profiles focus on six conditions that occur frequently in the Medicare population: diabetes; hypertension; chronic obstructive pulmonary disease; congestive heart failure; ischemic heart disease; and osteoarthritis. The performance measures included in these profiles are based on clinical events, specific actions and activities that have significance for physicians.

As with the claims performance measures, the performance measures derived from the office medical record were selected for their clinical relevance. The measures were built around clinical activities that are commonly performed in the course of an office visit; we called these activities functions. The following functions are reviewed:

- Making a ***diagnosis***;
- Prescribing a ***drug***;
- Responding to an abnormal ***test***;
- Ordering or performing a ***procedure***;
- Performing ***preventive*** or ***screening*** services; and
- ***Follow-up*** of serious health threats.

Functions are performed for specific ***"clinical items,"*** e.g., for a specific drug. Summary measures of quality for key aspects of the clinical processes related to functions, e.g., the rate of drug prescriptions that were clearly appropriate for a given drug, are known as ***"indicators."*** Unique ***"criteria"*** have been developed for each clinical item/indicator pair, such as a list of the appropriate indications for a specific drug. We also developed a rating for the adequacy of documentation in the record.

Evaluation

Each measure was evaluated for its reliability and validity. Reliability studies compared the data in the claim to the information in the record and tested the inter-rater reliability of the record abstraction instrument. Validity was evaluated by querying physicians about the face validity of the measures and through structured peer review.

What was done with the data once they were collected? The following describes the feedback strategy we used to disseminate the results of the study to physicians.

A Strategy of Feedback to Groups

In May 1992, the Delmarva Foundation for Medical Care (DFMC) submitted a proposal to "develop and test prototypical materials and methods that can be used to feedback the results of records and claims reviews" (DFMC, *Contract Modification Technical Proposal*). These materials would include written educational reports as well as workshops. In February 1993, in response to discussion with HCFA, DFMC submitted a revised proposal which was subsequently approved. On March 1, 1993, the Feedback and Education Phase of DEMPAQ began.

The primary goal of the DEMPAQ project has been to convince physicians of the opportunities for improvement by promoting professional self-examination and fostering educational opportunities. Rather than focusing on the performance of individual physicians, the DEMPAQ project has concentrated on measuring and moving the mean of group performance. The traditional emphasis on individual cases has serious limitations. First, it is labor intensive and not particularly productive. For example, the Medical Practice Study had to screen 30,195 cases to identify 1,278 adverse events (weighted estimate of adverse event rate, 3.7%) (Brennan, Leape, et al., 1991). Three analyses of screening within the PRO program identified case finding rates of 0.9% (OIG, 1992), 6.3% (Rubin et al., 1992) and 0.04%—2.8% (IOM, 1990). Because serious adverse outcomes are usually rare events, many cases must be screened to identify a single problem. Moreover, very rare events may be random occurrences rather than an indication of poor quality (Luft and Hunt, 1992).

Second, literature on the etiology of errors shows that poor outcomes do not necessarily result from individual human failures (Reason, 1991). Rather, the systems within which individuals work contribute significantly to the chance that a problem will occur. The human engineering approach suggests that making individuals "pay more attention" to their work is less likely to reduce injury than redesigning the system. Berwick, in his book *Curing Health Care,* espouses a similar theme when he asserts that "The main source of quality defects is problems in the process" (Berwick et al., 1990, p. 35).

A final limitation of a strategy focused on individual instances of poor performance is that it fails to foster the positive team relationships that are crucial for producing quality health care.

The strategy of focusing on groups, in contrast, has advantages. There is movement away from assigning blame towards implementing one of the tenets of the total quality management (TQM) philosophy—every problem or error presents an opportunity for improvement (Berwick et al., 1990). The strategy of focusing on patterns of practice rather than individual errors is also being promoted by HCFA as part of the Health Care Quality Improvement Initiative (HCQII), now referred to as the Health Care Quality Improvement Program (HCQIP). The PRO Fourth Scope of Work places new emphasis on cooperative relations with physician groups.

DEMPAQ's vehicle for achieving the twin goals of education and promotion of professional self improvement is feedback to groups and individual providers. Behavior change theory and research demonstrate the importance of feedback as part of a program in effecting change (Ende, 1983; Restuccia, 1982; Barton and Schoenbaum, 1920). Winickoff demonstrates that feedback to individuals with comparisons to groups is essential to improving physician performance (Winickoff et al., 1984). In a randomized controlled trial involving over 14,000 patients and 711 practitioners in 16 primary care sites, Palmer et al. demonstrate that educational feedback of performance measures by a physician from within each practice improved performance, especially in areas of performance that were under immediate physician control (Palmer et al., 1985). Goldman suggests that for feedback to be effective it needs to be combined with strategies for changing knowledge (Goldman, 1990). Furthermore, feedback linked with education has been shown to be an important determinant of behavior change (Lomas et al., 1991).

Thus we chose to design an educational package that focused on group performance but also provided individuals with peer comparisons. Change ultimately takes place at the individual level; information about performance relative to peers can foster appropriate change. To link feedback with education, materials were disseminated in a Continuing Medical Education (CME) setting.

The remainder of this chapter briefly describes the DEMPAQ educational package: how it addresses Accreditation Council for Continuing Medical Education (ACCME) guidelines and how we structured the package.

ACCME Essentials and Guidelines

The ACCME has established essentials and guidelines for all CME programs. Broadly, these state that programs must address specific needs, be targeted to identified populations and meet clear objectives. The following describes how the DEMPAQ CME package satisfied these essentials.

Need

The DEMPAQ CME package addresses need on two different levels. First, there is the broad need for physicians to continually monitor and improve the quality of their performance. This need may or may not be perceived by the average practicing physician. To the extent that they do not perceive it, we assist physicians in recognizing the importance of quality management.

The need to monitor and improve quality is essential in today's environment. The rapidly changing practice of medicine means physicians must constantly learn and change to keep pace with the community standard of medical care. In addition, the threat of malpractice litigation and of competition for patients necessitates a proactive stance towards quality.

The second concept of need we addressed was specific clinical needs as identified by our review instruments. By documenting patterns of practice, these tools have aided in identifying areas where physician performance could be improved through targeted educational efforts.

Target Population

The target population for the CME was the DEMPAQ physician participant, i.e., the individual who responded affirmatively to the invitation to submit records for review. Although the CME was primarily for these individuals, other physicians interested in monitoring quality also chose to participate.

Objectives

For the Maryland feedback, the CME package had three major objectives:

- Communicate the importance of quality monitoring and management in clinical practice;
- Use the DEMPAQ reports for self-review and education; and
- Present detailed information about patient management and practice organization for selected topics.

These objectives addressed both concepts of need described above. The performance reports documented specific areas for improvement and thus demonstrated the importance of quality monitoring. The self-review instrument provided the means to carry out the monitoring. Workshop faculty and the educational materials accompanying the self-review tool covered selected topics in detail. These topics were chosen based on the results of the DEMPAQ pattern analysis.

After the Maryland CME workshop, the objectives of the CME were revised (see Chapter 3 for explanation of why changes were made). The objectives for the Alabama and Iowa workshops were:

- Educate physicians about the DEMPAQ project—its goals and objectives;
- Teach one method of self-review for quality monitoring;
- Present statewide results of the record review and the claims profiling; and
- Promote discussion of strategies for managing patient care in the ambulatory setting.

The DEMPAQ CME Package

The DEMPAQ CME package in each state had three elements:

- A CME workshop;
- A CME workbook; and
- Reports of profiles and patterns—the results of the DEMPAQ record review and claims profiling.

Each of these elements is described in greater detail in Chapter 3 (workshop), Chapter 4 (workbook), Chapter 5 (claims report), and Chapter 6 (record report). An overview is presented here.

CME Workshop

The CME workshop was the cornerstone of the DEMPAQ CME effort. Three workshops were conducted, one in each of the three study states: Maryland (June); Alabama (September); and Iowa (October). The workshops were supported, and in the case of Iowa, co-sponsored, by primary care physician groups.

Each workshop contained, at a minimum, the following modules:

- An introduction—the history of the project and the relation of DEMPAQ to practice guidelines and changes in medicine;
- DEMPAQ background information—the project's philosophy and structure;
- Training for self-review;
- Self-review of own records (or teaching charts) for quality markers;
- Claims review results and discussion;
- Question and answer period with clinical experts; and
- Structured opportunity to provide feedback to the DEMPAQ faculty about the workshop.

As described in Chapter 3, the Maryland workshop was used as a first test of the CME materials. Based on experience gained in the Maryland workshop, the agenda was substantially revised and reorganized.

CME Workbook

The CME workbook combined the principles of self-review and directed education and was based on adult learning theory. The book provided the necessary instructions and materials to conduct a structured self-review of performance. The workbook was also structured to serve as a reference text, documenting the clinical rationale for each of the criteria used by the project.

Reports of Profiles and Patterns

The third component of the DEMPAQ CME package was reports of patterns of practice derived from claims data and the records review. The reports were designed with the needs of individual physicians and physician groups in mind. All reports contained comparisons to a peer group since earlier research demonstrated that educational feedback of performance data is effective in influencing behavior change.

Reports were prepared both for physicians who submitted records (DEMPAQ participants) and those who attend the workshop without having submitted records (non-DEMPAQ participants). The claims profiles for the DEMPAQ participants were based on their own claims data. The claims profiles for the non-DEMPAQ participants were based on statewide specialty specific data.

Two different types of claims profiles were produced:

- Condition specific profiles; and
- Office practice profiles.

As with the claims, medical records reports were prepared for both physicians who submitted records and those who attended the workshop without having submitted records. The reports for the DEMPAQ participants were based on their own medical records. The reports for the non-DEMPAQ participants were based on statewide specialty specific data.

Four types of records reports were produced:

- *Clinical Item Report*—44 tables, one per clinical item, showing performance on each separate criterion;
- *Indicator Summary Report*—six tables, one per function, showing summary performance on each of the function's indicators;
- *Function Summary Report*—one table, summarizing performance on each function;
- *Record Documentation Report*—one table, describing average documentation for the 20 charts reviewed by the project.

Summary

The DEMPAQ CME package was designed to meet both the needs of the project and the requirements of the Accreditation Council for Continuing Medical Education. It included a CME workshop, a CME workbook, and reports of performance based on claims and records data. A single workshop was conducted in each study state with self-review using the DEMPAQ CME workbook as the focal activity. The feedback reports presented at the workshop were designed to display patterns of practice rather than to identify outliers.

Appendix 1

DEMPAQ Claims Review System
CME Workshop

DIABETES
Instructor's Version
October 27, 1993

Results	Discussion Question	Issue or Point
HbA1	• What is rate of patients receiving one or more HbA1 tests? • Is this rate higher or lower than expected? • Do you believe this result? • How do you interpret this result? • What monitoring do you do?	• Can you read the table? This answer requires subtracting from 100. • Answer should come from worksheet • May be some debate about appropriate role of HbA1 • Recommended care items should have a low percentage of patients with zero services.
Eye Visits	• What percentage of patients had no ophthalmologic exams? • How important are regular eye exams for diabetic patients? • Do you know whether your diabetic patients have their eyes examined regularly? How do you know? (POSSIBLE ANSWERS: I always ask them. They tell me. I refer them. I get a note from the ophthalmologist.)	• Can you read the table? • Validity • Claims most complete way to get this information.

Results	Discussion Question	Issue or Point
Blood glucose	• What percentage of diabetic patients did not receive at least one blood glucose in the study period? • How do you interpret this result? (POSSIBLE ANSWERS: - They monitor at home. - I don't think it is useful. - I use HbA1 or fructosamine.)	• Can you read the table? • **To interpret limited use items, need to keep in mind alternative explanations for findings. Here, the percentage of patients receiving a blood glucose is affected by home monitoring, etc.**
Lower Extremity Amputation	• According to Table 2, what is the most frequent complication of diabetes leading to hospitalization?	• Can you read the table? • There are other complications of diabetes that we didn't list. • **For this profile, we chose complications that could be aggravated by poor ambulatory care**

Results	Discussion Question	Issue or Point
Days until visit	• Where do patients go after being discharged from the hospital? (POSSIBLE ANSWERS: - home - other hospital - rehab facility - SNF - death) • What are some of the factors that might influence the average number of days after discharge until an office visit?	• Patients discharged to another facility will have long avg. days until visit. • Must keep in mind alternative explanations. • Be wary of the small n • This is visits to any physician in the office, specialist or primary care physician. • Patients without ambulatory visits - discharged near end of study period so no follow-up dates - patient died shortly after discharge - patient re-admitted - no follow-up visit occurred
Podiatrist	• Is this number higher or lower than expected? • How many specialists do you think your patients see? • What are some factors that affect the number of specialists your patients see?	• Expectation depends on how many specialists you think your patients see. • Breadth of claims, get all utilization by patient, not just what you might know about. • Depends on supply of specialists. Patient can't see podiatrist is there are none around.

DEMPAQ Claims Review System
CME Workshop

HYPERTENSION
Instructor's Version
October 27, 1993

Results	Discussion Question	Issue or Point
Visit 1st six months	• How important is it for hypertensive patients to be seen in each half year? • Would it be more valid to search for two visits at least 4 or 5 months apart?	• Validity • Data do not show twice a year. • How often should patients with HTN be seen? • Recommended care items should have a low percentage of patients with zero services. • Appears to be good compliance with guideline.

Results	Discussion Question	Issue or Point
Potassium	• For which hypertensive patients is a serum potassium important? (POSSIBLE ANSWERS: - those on diuretic therapy)	• Limited use items are often "recommended care" for a subset of patients
	• Considering the proportion of patients for whom a serum potassium is important, does this figure appear high or low?	• Need to compare limited use items to something. Data scraps acquire meaning through comparison.
	• What are some possible comparisons that would help make these data interpretable? (POSSIBLE ANSWERS: - own experience - time trends - stratifications	• Comparisons - own experience - time trends - stratifications
	• What might inflate the percentage of patients receiving a serum potassium? (ANSWER: - panels)	• Be aware of which tests appear in panels when interpreting the results
Areas of difference	• What differences do you find? (POSSIBLE ANSWERS: - younger patients more likely to get triglycerides - younger patients more likely to get total cholesterol - older patients more likely to have a visit	• Can you read the table?
	• What differences do you expect to find based on age? (POSSIBLE ANSWERS: - none - in the direction found)	

Results	Discussion Question	Issue or Point
Triglycerides	• Are the differences between 1a and 1b statistically significant? (YES) • Are the differences clinically important? (NO)	• **Large sample sizes can create statistically significant differences that are not necessarily clinically important. Must keep in mind the clinical significance of findings.**
Patients with IHD	• What proportion of all HTN patients have IHD? • Does this proportion reflect your experience?	• Can you manipulate the data? • Validity
IHD Cholesterol	• Are hypertensive patients with IHD more or less likely to have total cholesterol measured? (MORE) • Why	• Is this a clinical issue or an artifact of sicker patients being seen more often and so having more opportunity to be tested?
TIA vs CVA	• Regarding Table 2, why is the rate for TIA about half that of cerebrovascular accident?	• TIA's may not get hospitalized.
Cardiologist	• Regarding Table 3, what percent of hypertensive patients in the study visit cardiologist? • Is this higher or lower than expected? Why?	• Can you read the table? • Don't forget specialty supply as an issue.

Chapter 3
The CME Workshops

Abstract
The cornerstone of the DEMPAQ Feedback and Education effort was a CME workshop conducted in each of the three study states. The first workshop was held in Baltimore, Maryland, on June 30, 1993. Workshops were held later in Alabama (September 24, 1993) and Iowa (October 27, 1993). In addition, interested physicians could pursue a course of home study.

The American Medical Review Research Center coordinated the workshops and issued the CME credits for two of the three workshops and for all three home study courses. The University of Iowa issued credit for the Iowa workshop.

Each workshop was similar in content and format, with some variations. All workshops opened with local physicians introducing the DEMPAQ project and its history. Next the project's structure and criteria development were described. Instruction for self-review, conduct of self-review, records results, question and answer period with experts, claims results, and wrap-up discussion followed, although not necessarily in that order.

Evaluations conducted by AMRRC indicated that the workshops were very favorably received.

Based on the experience in the three study states, several recommendations are made to improve the quality of the workshops as an intervention designed to promote ambulatory care quality.

This chapter describes the CME workshops which were conducted in each of the three study states. While the workshops were similar in content and format, there were differences to accommodate regional preferences. The following describes first the Maryland workshop and then the Alabama and Iowa workshops. Next, the workshop evaluations conducted by the American Medical Review Research Center (AMRRC) are presented. The chapter concludes with specific recommendations for conducting future workshops as interventions to improve ambulatory care quality.

Maryland Workshop

The Maryland workshop served as the blueprint for the other two workshops. AMRRC functioned as coordinator for all three workshops. Staff at AMRRC located and contracted with the conference facility in each state, developed and distributed the conference announcement brochures, managed the registration for both the workshop and the home study, and awarded CME credits. Following the Maryland workshop, AMRRC coordinated the initial contacts with the other two states to set the process in motion. AMRRC also prepared the conference evaluation questionnaires, results of which are displayed at the end of this chapter.

Planning

Planning for the Maryland workshop began nearly six months in advance of the workshop date with contacts between Jean Edwards, DEMPAQ Project Director, and Dr. James Hudson, Associate Dean for Academic Administration at the University of Maryland School of Medicine. On February 3, 1993, a preliminary conference call was held between Dr. Mason, Dr. Raul Felipa, Mr. Don Spencer, Ms. Edwards, Dr. Palmer and Dr. Lawthers to introduce the DEMPAQ CME concept. A follow-up discussion by the Maryland CME Planning group, hosted by the American Medical Review Research Center, was held on March 24, 1993, in Frederick, Maryland. The planning group membership is shown in the table on the next page.

The planning group included two liaison physicians. Dr. Palmer approached the primary specialty societies in each state at the beginning of the DEMPAQ project, asking for a liaison to be named between the society and the project. Initially, these liaisons voiced much skepticism and doubt about the project and its motives. Over the course of the three-year working relationship, the doubt and distrust turned, in most cases, into enthusiastic collaboration between the liaisons and the project. By the end of the project, most liaison physicians served as advocates for the DEMPAQ approach to their society membership.

Subsequent to the March planning meeting the agenda was drafted and finalized, and a CME brochure prepared (see Appendix 1). The brochure presented the workshop's objectives, faculty and agenda. Objectives were formulated for the overall workshop and for each session and may be found in the brochure. Special coupons were prepared and mailed to all DEMPAQ participant physicians, entitling them to free CME credits if they completed the CME requirements. The table on this page summarizes key features of the workshop.

Table One
Maryland CME Workshop At A Glance

Workshop Date:	June 30, 1993
Workshop Length:	9 hours (8 am - 5 pm)
Workshop Title	Physician Self-Assessment of Primary Care Quality
CME Credit	7 hours Category 1 for workshop 7 hours Category 2 for home study
Accrediting Body:	AMRRC
Facility:	BWI Marriott, Baltimore, MD
Planning Group:	• Victor Raul Felipa, MD, Director AHEC Physician Caucus • Sheldon Goldgeier, MD, Internist and DEMPAQ liaison physician • James I Hudson, MD, Associate Dean for Academic Administration, U of Maryland • Jack L. Mason, PhD, Continuing Education Director, U of Maryland • Don Spencer, Director, AHEC • Joseph Zebley, III, MD, Family Physician and DEMPAQ liaison physician
Faculty:	• Introductory speakers recruited from Planning Group • Preceptors recruited from physicians who conducted DEMPAQ peer review • Experts recruited from University of Maryland faculty • Other staff from Delmarva and the Harvard School of Public Health
Curriculum:	Developed by HSPH and DFMC.
Teaching Objective:	Primary care physicians will understand the importance of quality monitoring and management in clinical practice. They will also understand the overall objectives of the three year DEMPAQ project *to develop self-assessment and feedback tools for the review of physician office-based care.*
Agenda:	• Welcome • Introduction • A Physician Perspective on DEMPAQ and Quality Improvement in Maryland • DEMPAQ: A Structural Description • Patterns in Maryland Medicare Claims Data • Questions and Answers • *Break* • Instruction of Self-Review of Medical Records • *Lunch* • Self-Review Exercise • Selected Clinical Topics • Evaluations Completed • Closing Presentations

Results of the Maryland Workshop

Although the Maryland workshop went well, a number of opportunities for improvement presented themselves. First, the number of introductory speakers needed to be severely limited. Too much time in the Maryland workshop was devoted to introduction rather than to DEMPAQ material. We learned that the most effective introductory speaker was a DEMPAQ liaison physician who spoke about the history of the project in his own words.

Second, we learned that the self-review portion of the workshop needed to follow soon after the introductory material. Physicians remembered submitting their records and came to the workshop expecting to see the results of that review. The self-review served not only to orient them to the type of results the project produced but to diffuse tension about project findings. At the beginning of the self-review portion of the workshop, the body language of most of the Maryland physicians was tense, hostile and defensive. Their initial comments were incredulous "You mean, you actually want me to document every time I prescribe a drug in a risk-benefit situation?! I'd never see a patient. I'd spend all my time documenting." By the end of the review, the physicians were relaxed and several of them even admitted, "Gee, this is fun."

Third, it seemed to be important to have *physician* preceptors because they could offer doctor-to-doctor comments. Many of the workshop attendees complained about the level of documentation the project required. Two of the physician preceptors at the Maryland workshop were quite effective in diffusing some of that tension.

Fourth, several workshop participants suggested that we use the case study method to teach the self-review and walk the participants through an actual case. Participants also suggested that worksheets be available during the instruction for the review.

The fifth lesson we learned was that we needed to reserve time to present summary record review results. As noted earlier, the physicians came to the workshop expecting to see results.

Using the workshop to conduct formal education about selected topics did not work as well as anticipated. In spite of the faculty's best intentions, this portion of the program became a bit pedantic. Several of the participants commented that they were not told anything they did not already know. The better part of this segment was the question and answer period with two clinical experts from the University of Maryland: Dr. Lash for diabetes and Dr. Hamilton for hypertension. Participants were invited to ask the specialists about diabetes and hypertension. This generated some interesting and useful pieces of information.

The claims portion of the workshop needed to occur after the records review. Otherwise, participants became confused about whether they were looking at records or claims results.

Alabama and Iowa Workshops

As with the Maryland workshop, the Alabama and Iowa workshop planning efforts commenced with a conference call involving Dr. Palmer and members of the planning group in each state (see Tables 2 and 3 on the following pages). This call outlined the DEMPAQ CME philosophy and presented a draft agenda. Following these introductory conference calls, the planning groups in each state met to discuss and approve a revised workshop agenda.

Based on the Maryland experience, we recommended the following agenda changes to the Alabama and Iowa planning groups:

- Move self-review to the morning, immediately following the introduction;
- Begin afternoon session with a presentation of selected record review results on overheads;
- Build into the workshop a session where the participants are taught how to read the records reports and presented with summary records data;

- Have clinical experts present to interact with the audience. Open the discussion up to the participants and the experts on how to handle specific clinical situations; and
- Move the claims report evaluation to the end of the program. Add an evaluation of the record report. Allow participants 45 minutes to look through the report books and fill out the evaluation forms.

The planning groups adopted these recommendations. New brochures (see Appendices 2 and 3) and coupons were printed and distributed by mid-August.

Results of Alabama Workshop

The Alabama workshop went extremely well. Although the attendance was light (six participants and one nonparticipant), the audience was very responsive. They clearly understood what we needed from them and offered constructive comments and criticisms throughout the day.

Several factors probably contributed to the success of the workshop. First, Dr. Sherrill, Alabama Quality Assurance Foundation (AQAF) Medical Director, and Dr. Hall, AQAF Medical Advisor, exerted a beneficial influence on the audience. Dr. Sherrill's opening statement was brief and positive. He referred to the workshop as the "post-Clinton health conference." His congenial style clearly relaxed the audience.

Second, the light attendance meant that the faculty could devote plenty of one-on-one attention to the participants.

Third, the revised organization of the agenda worked quite well. Because the teaching case selected to illustrate the review process also addressed the tricky subjects of monitoring time frames and decision rules, we quickly aired concerns about these issues. For example, in order to conduct a consistent review, one where each reviewer uses the same decision policies, the project established rules about interpreting time frames, e.g., "q. 6 months" meant every six months, plus or minus two weeks. From the workshop discussion, we were able to convey to the physicians that we needed them to identify places where the criteria did not work well and to offer concrete suggestions about how to change them. This discussion was instrumental in setting the tone for the workshop. We were able to demonstrate that we took their input seriously.

Table Two
Alabama CME Workshop At A Glance

Workshop Date:	September 24, 1993
Workshop Length:	9.25 hours (8 am - 5:15 pm)
Workshop Title:	Physician Self-Assessment of Primary Care Quality
CME Credit	7 hours Category 1 for workshop 7 hours Category 2 for home study
Accrediting Body:	AMRRC
Facility:	Raddison Hotel, Birmingham, Alabama
Planning Group:	• Pink L. Folmar, MD, Internist, DEMPAQ liaison physician • Laurie T. Hall, MD, Internist, AQAF Medical Advisor • Peter W. Morris, MD, Internist, DEMPAQ liaison physician • Brian A. Perry, MD, Family Physician, DEMPAQ liaison physician • Robert G. Sherrill, MD, Medical Director, AQAF • George T. Smith, MD, Director Division of Continuing Medical Education, University of Alabama
Faculty:	• Introductory speakers recruited from Planning Group • Preceptors included DEMPAQ nurse reviewers • Expert recruited from University of Alabama faculty • Other staff from Delmarva and the Harvard School of Public Health
Curriculum:	Developed by HSPH and DFMC.
Teaching Objective:	Primary care physicians will understand the overall objectives of the three year DEMPAQ project to promote professional self-improvement with the aid of tools developed specially for the review of physician office-based care. Physicians will learn and use one of the tools to review medical records. Physicians will understand state-wide practice patterns in ambulatory care provided to the elderly as profiled through Medicare claims and medical records.
Agenda:	• Welcome • Introduction • DEMPAQ: A Structural Description • Instruction of Self-Review of Medical Records • *Break* • Self-Review Exercise • *Lunch* • Alabama Performance Patterns from Medical Record Review (includes Q & A with experts) • *Break* • Patterns in Alabama Medicare Claims Data • Review of DEMPAQ reports • Evaluations Completed and Closing Presentations

Results of Iowa Workshop

The Iowa workshop was the most challenging for faculty, because of overtly skeptical attitudes brought to the workshop by some attendees. A variety of factors probably contributed to the atmosphere at the Iowa workshop, including a period of time of uneasy relations between the PRO and the physician community. In addition, Iowa physicians, from the very beginning of the project, had been more cautious about DEMPAQ than physicians in the other states. Early contacts with physicians in Iowa illustrated their concerns. The low participation rate is probably a symptom of the issues in Iowa.

Table Three

Iowa CME Workshop At A Glance

Workshop Date:	October 27, 1993
Workshop Length:	9.25 hours (8 am - 5:15 pm)
Workshop Title:	Physician Self-Assessment of Primary Care Quality
CME Credit	7 hours Category 1 for workshop 7 hours Category 2 for home study
Accrediting Body:	University of Iowa for Category 1 credit, AMRRC for homestudy (Category 2) credit
Facility:	Holiday Inn, Downtown, Des Moines, Iowa
Planning Group:	• Donna Bottorff, Medical Services Coordinator Iowa Medical Society • Louis G. Crist, MA, Program Associate, College of Medicine, University of Iowa • Nancy Paine, RN, Director, Government Operations, IFMC • Norman L. Pawlewski, Executive Director, IOMA • Kevin M. Quinn, MD, Immediate Past President, Iowa Clinical Society of Internal Medicine • Milton J. Van Gundy, MD, Family Physician and DEMPAQ liaison physician • Jennie L. Van Gundy, RN, DEMPAQ Review Coordinator • Janet Wee, Executive Director, Iowa Academy of Family Physicians
Faculty:	• Introductory speakers recruited from Planning Group and from DEMPAQ liaison physicians • Preceptors included physicians involved in DEMPAQ peer review • Experts recruited from University of Iowa faculty • Other staff from Delmarva and the Harvard School of Public Health
Curriculum:	Developed by HSPH and DFMC.
Teaching Objective:	Primary care physicians will understand the overall objectives of the three year DEMPAQ project to promote professional self-improvement with the aid of tools developed specially for the review of physician office-based care. Physicians will learn and use one of the tools to review medical records. Physicians will understand state-wide practice patterns in ambulatory care provided to the elderly as profiled through Medicare claims and medical records.
Agenda:	• Welcome • Introduction • DEMPAQ: A Structural Description • Instruction of Self-Review of Medical Records • *Break* • Self-Review Exercise • *Lunch* • Iowa Performance Patterns from Medical Record Review (includes Q & A with experts) • *Break* • Patterns in Iowa Medicare Claims Data • Review of DEMPAQ reports • Evaluations Completed and Closing Presentations

AMRRC General Evaluation Results

The overall workshop evaluations showed the benefit of this type of intervention. Results of each state's evaluation are shown in appendices 4-6. Summary results are shown in Table 4.

In general, workshop participants:

- Found the workshop a worthwhile experience (78% agreed it was worth the time invested);
- Believe the workshop presented information that they could use in their practice (76%); and
- Plan to incorporate the information learned at the workshop in their practice (76%).

On the minus side:

- Iowa physicians were consistently less positive about the workshop than Maryland or Alabama physicians (see Table 4); and
- Some physicians questioned the clinical validity of the quality information presented at the workshop; however, 64% of the participants found the information clinically valid.

A few workshop participants verbalized that they believed the message of the conference to be about documentation (more documentation is needed) rather than about clinical practice (e.g., more HgbA1C tests are needed for diabetic patients).

Table Four
Overall Workshop Evaluation
Percent of Participants
Reporting Agree or Strongly Agree

Question	MD	AL	IA	Overall Three State Combined
1. The workshop helped me understand the importance of quality monitoring and management in clinical practice.	90%	56%	57%	62%
2. The workshop helped me understand the overall DEMPAQ objective of developing self-assessment and feedback tools for the review of physician office based care.	95%	89%	86%	90%
3. The workshop taught me one method of quality self-assessment.	79%	89%	79%	81%
3b. The workshop helped me understand DEMPAQ's objective of promoting professional self-improvement.	90%	89%	77%	85%
4. The workshop presented information I can use in my clinical practice.	79%	100%	57%	76%
5. The workshop *content* was well organized.	79%	100%	71%	90%
6. The workshop presented clinically valid information on quality of care review of primary practice.	74%	56%	57%	64%
7. I plan to incorporate the information learned at this workshop in my clinical practice.	84%	89%	57%	76%
8. The workshop provided adequate opportunities for me to participate in the learning process.	95%	100%	62%	85%
9. The meeting facility was adequate.	100%	89%	71%	90%
10. The workshop was worth the time invested.	84%	78%	69%	78%
11. I would recommend this workshop to others	67%	78%	64%	69%

The impact of the revised agenda is visible in the results of the individual session evaluations (see Table 5). For the self-review portion of the workshop, only 63% of the Maryland participants felt they learned how to apply the DEMPAQ criteria in a review of their own records. Seventy-four percent of Maryland physicians felt they were able to complete the self-review exercise. In contrast, the ratings for the Alabama and Iowa workshops are higher (e.g., 88% and 80%, respectively learned to apply criteria; 78% and 80% were able to complete the self-review exercise).

Similarly, physicians' perceptions of the usefulness of the afternoon sessions increased after the detailed clinical topics sessions were replaced with a presentation of overall DEMPAQ results and with question and answer periods with experts. Fifty-seven percent of Maryland participants felt they learned information about patient management that they could use in their practice. This perception increased to 63% in Alabama and 77% in Iowa.

Another, less positive outcome of revising the agenda was the impact on the claims presentation. In Maryland, the review of Medicare claims data came early in the program, before 10:00 A.M. In Alabama and Iowa, the review took place at the end of the afternoon, when participant fatigue probably contributed to their perception of the session.

Table Five
Individual Session Evaluations
Percent of Participants
Reporting Agree or Strongly Agree

Session	MD	AL	IA	Overall Three State Combined
Introduction				
The introduction highlighted the collaborative nature of the DEMPAQ project and its goals	84%	100%	80%	93%
A Physician's Perspective on DEMPAQ and Quality Improvement (Maryland only)				
Each presentation focused on a Maryland practicing physician's perspective on quality improvement with particular attention to DEMPAQ and the PRO role	59%			59%
DEMPAQ: A Structural Description				
I am able to describe how DEMPAQ used Medicare claims data and medical records to profile physician practice patterns	94%	78%	80%	86%
I am able to outline how DEMPAQ performance measures were developed.	79%	78%	73%	77%
Instruction for Self-Review of Medical Records				
I became familiar with the DEMPAQ Self-Assessment Worksheet used in reviewing medical records	68%	89%	80%	77%
I found the DEMPAQ Workbook clear and easy to understand	63%	78%	67%	67%
I learned how to apply the DEMPAQ criteria in a review of [my own] or [general] medical records.	63%	78%	80%	74%
Self-Review Exercise				
I was able to review cases using the DEMPAQ Self-Assessment Worksheet and Workbook	74%	78%	80%	77%
The morning instruction session adequately prepared me for the self-review exercise.	67%	78%	73%	74%
Performance Patterns From the Medical Record Review (Alabama and Iowa only)				
I understand statewide patterns of managing hypertension and diabetes in the elderly ambulatory population		78%	53%	63%

Session	MD	AL	IA	Overall Three State Combined
I had the opportunity to discuss the results of the study		88%	60%	70%
I learned information about patient management that I can use in my clinical practice		63%	77%	65%
I am able to read and interpret the DEMPAQ reports based on medical records data		78%	60%	67%
Selected Clinical Topics (Maryland only)				
The special topics discussion focused on how my performance of routine clinical activities compares with that of other primary care physicians in Maryland	73%			73%
I learned information about patient management that I can use in my clinical practice	57%			57%
Patterns in Medicare Claims Data				
This examination of Medicare claims information helped me better understand statewide ambulatory care practice patterns for care provided to the elderly.	79%	78%	50%	69%
I am able to read and interpret the DEMPAQ reports of physician practice patterns based on Medicare claims data.	78%	56%	50%	65%
Review of DEMPAQ Reports (Alabama and Iowa only)				
I was able to use the study records and claims reports to compare my performance to that of my peers and to answer questions about the interpretation of the data		67%	50%	59%
Closing Presentations				
I found it useful to learn how my physician colleagues reacted to workshop material	86%	89%	67%	83%
I valued the opportunity to make recommendations concerning the DEMPAQ approach to quality improvement	86%	89%	69%	81%

Recommendations for Conducting CME Workshops

Based on the experience in all three workshops, we have the following recommendations for conducting workshops as "interventions" for promoting ambulatory care quality:

1. Make sure there is at least one *locally recruited* physician who is a *strong opinion* leader, who can set the tone for the workshop and remind participants of the purpose of the workshop, if necessary.
    - ❖ If a prominent local advocate is lacking, workshop attendees may not be receptive to the ideas and concepts presented during the workshop.

2. Begin the workshop, as in Alabama and Iowa, with the self-review. This serves well to orient the physicians to the project and the criteria. *However*:
    - ❖ Revised versions of the criteria should be used—several of the Iowa workshop attendees commented that they felt they could not believe the aggregate record review results because the self-review in the morning had shown them that the criteria were flawed.
    - ❖ Specially designed teaching cases rather than actual charts should be used. A number of genuine nurse abstractor errors surfaced during the self-review, which distracted the physician learners. In addition, at least two of the non-DEMPAQ workshop attendees became hostile when they could not read the teaching chart. Both individuals accused us of including the chart to make the point that doctors' handwriting can be terrible. Specially designed, perhaps typewritten, cases targeting certain issues would avoid this problem.
    - ❖ Limit the self-review to one hour or slightly longer. Two hours seems to result in "burn out."

3. Present aggregate records and *claims* results next. An integrated presentation showing how the records and claims complement each other would work well.
    - ❖ Accompany each graph with examples of the types of questions the data raise (see Chapter 20, *DEMPAQ Final Report*).
    - ❖ Solicit comments and observations from the audience.

4. Conduct a question and answer session with experts. Purpose: to generate discussion of specific clinical issues that participants might have; to educate on these issues; and to provide a forum for physicians to share patient management strategies.
    - ❖ Make sure the moderator accepts the purpose of the session. The session loses focus if the moderator tries to turn the question and answer period into a critique of the criteria.

5. Explain how to read the reports and give participants time to review them. Skip the detailed questionnaires evaluating the reports. These detracted from a relaxed perusal of the reports. The attendees found themselves focusing on answering the questions rather than on reading the reports.
    - ❖ Consider the balance of report detail and workshop length. While the written evaluations of the reports (see Chapters 4 and 5, this report) indicate that physicians appreciated the level of detail, the sentiment expressed during the workshop was that the reports were too complex. This probably stems from presenting a great deal of material in a short time frame.

Appendix 1

A participatory workshop on

"Physician Self-Assessment of Primary Care Quality"

Register by June 4, 1993!

Supporting Organizations

Delmarva Foundation For Medical Care
Maryland Academy of Family Physicians
Maryland Society of Internal Medicine
Medical and Chirurgical Faculty of Maryland
University of Maryland School of Medicine
Western Maryland Area Health Education Center

CME Sponsor

American Medical Review Research Center

WEDNESDAY, JUNE 30, 1993
BWI AIRPORT MARRIOTT
1743 West Nursery Road
Baltimore, Maryland

Space Limited - Advance Registration Only

"Physician Self-Assessment of Primary Care Quality"

DESCRIPTION

This program is a participatory learning workshop in which primary care physicians will be instructed in a quality monitoring self-assessment approach. The methodology provides feedback on the quality of office-based care with comparisons to peers in the state. The program has been developed by the *DEMPAQ* project. *DEMPAQ* stands for *Developing and Evaluating Methods to Promote Ambulatory Care Quality*.

TARGET AUDIENCE

Primary care physicians who provide care to Medicare beneficiaries in their office practice.

GENERAL TOPIC

Quality improvement in primary care: a topic of increasing concern to physicians who wish to initiate quality of care improvements in their offices.

HOW

This participatory workshop will instruct physicians in a self-assessment approach which provides feedback on the quality of office-based care delivered by physicians in the state. Physicians will receive statewide profiles derived from Medicare claims data as well as patterns of practice constructed from medical records review data. Physicians will learn to review office records using *DEMPAQ* criteria.

GOAL

Physicians will assess the education and feedback potential of the *DEMPAQ* self-assessment program for their own practices.

PROGRAM OBJECTIVE

Primary care physicians will understand the importance of quality monitoring and management in clinical practice. They will also understand the overall objectives of the three year DEMPAQ project *to develop self -assessment and feedback tools for the review of physician office-based care.*

PLANNING GROUP MEMBERS

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Chair, AHEC Medical Caucus
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"Physician Self-Assessment of Primary Care Quality"

Wednesday, June 30, 1993
BWI Marriott

AGENDA

7:00 am - 4:30 pm **Registration Desk Open**

8:00 am - 8:10 am WELCOME

Sheldon Goldgeier, MD
Internal Medicine

James I. Hudson, MD
Professor of Epidemiology
Associate Dean for Academic Administration
University of Maryland School of Medicine

8:10 am - 8:20 am INTRODUCTION

Joseph W. Zebley, III, MD
Family Practice
Towson Medical Associates

The introduction will highlight the relevance of *DEMPAQ* to using practice guidelines, changing medical practice, and PRO relationships.

8:20 am - 8:30 am ***A Physician Perspective on DEMPAQ and Quality Improvement in Maryland***

Victor Raul Felipa, MD
Internal Medicine
Chair, AHEC Medical Caucus

Christine Marino, MD
Family Practice
Columbia Medical Clinic

Practicing physician's perspectives on quality improvement in Maryland will be presented with particular attention to *DEMPAQ*.

8:30 am - 8:45 am *DEMPAQ*: **A Structural Description**

Ann G. Lawthers, ScD
DEMPAQ Research Director
Lecturer, Center for Quality of Care
Research and Education
Harvard University School of Public Health

Physicians will be able to describe how Medicare claims data and medical records were used to determine the practice patterns of Maryland physicians. Understanding will include a sense of how the *DEMPAQ* performance measures were developed.

8:45 am - 9:45 am *Patterns in Maryland Medicare Claims Data*

Ann G. Lawthers, ScD
DEMPAQ Research Director
Lecturer, Center for Quality of Care
Research and Education
Harvard University School of Public Health

Physicians will understand statewide practice patterns in ambulatory care provided to the elderly through examination of Medicare claims. Physicians who previously submitted medical records for review will study reports based on their own claims data; others will receive reports based on statewide data. Physicians will have an opportunity to comment on their interpretation of the claims data and its significance for their practice.

9:45 am - 10:00 am **Questions and Answers**

Moderator: **Sheldon Goldgeier, MD**
Internal Medicine

10:00 am - 10:15 am **BREAK**

10:15 am - 11:30 am Instruction for Self-review of Medical Records
(Large Group)

Sandra J. Ray Moentmann, RN, MS
Project Manager *DEMPAQ*
Delmarva Foundation for Medical Care, Inc.

Physicians will become familiar with the forms used in reviewing medical records and the supporting clinical rationales. They will learn how to apply the theoretical knowledge acquired in the morning sessions in combination with the review forms, flags, and clinical rationales in the review of actual medical records.

11:30 am - 12:15 pm **Lunch** (on your own)

12:15 pm - 2:15 pm **Self-review Exercise**
(Small Groups with preceptors
clinical facilitators)

All physicians will understand how to use forms and accompanying clinical rationales from their CME workbook to review medical records for several key items. Physicians who submitted records in 1991, will review their own cases for items flagged as indicating need for improvement. Physicians who have not previously submitted records will review teaching charts that demonstrate clinical topics in which problems are common.

2:15 pm - 4:15 pm **Selected Clinical Topics**

Sheldon Goldgeier, MD
Joseph W. Zebley, III, MD

For selected topics, physicians will understand how their practice and performance of routine clinical activities, for example making diagnoses, prescribing and monitoring drugs, following up on abnormal test results, and performing procedures compares to that of their peers in the state. Physicians will learn detailed information about patient management and practice organization for those selected topics.

4:15 pm - 4:30 pm **Evaluations Completed** (Small Groups)

Physicians will complete evaluations of meeting content and format. Each table will select a representative to convey the impressions of the people seated at the table regarding the organization, content, and usefulness of the workshop.

4:30 pm - 5:00 pm **Closing Presentations** (Small Groups)

As one physician from each table presents the closing views of that group, physicians will hear how their colleagues reacted to the material presented during the workshop and have the opportunity to discuss and make recommendations concerning *the DEMPAQ* approach to quality improvement.

5:00 pm **Adjourn**

AN INTRODUCTION TO . . .

The American Medical Review Research Center
AMRRC - pronouced "am-rock, is a not-for-profit, 501(c)(3) public benefit, research and education organization dedicated to advancing the art and science of quality assurance and quality medical review. AMRRC is a national information, evaluation, testing, and analysis resource for practical tools, methodologies, and programs in quality evaluation. Along with other major projects, AMRRC currently has a three year contract with the Agency for Health Care Policy and Research (AHCPR) to develop, apply and evaluate medical review criteria based on clinical practice guidelines; and to implement and evaluate guideline-based quality improvement educational programs.

Center for Quality of Care Research and Education.
The Center is located within the Harvard School of Public Health and is a noncommercial academic center which conducts health system quality of care research. The Center's mission is to develop practical methods for improving the quality of medical care, with a special emphasis on ambulatory care, where the opportunities for prevention and early detection are greatest. The Center is staffed by experts in clinical medicine, public health, management science, biostatistics, computer science, and sociology. Seminars and training are frequently offered to medical professionals and managers.

The Delmarva Foundation for Medical Care, Inc.
Incorporated in 1973 DFMC's mission is to advance quality health care through education, research and evaluation. DFMC maintains review responsibilities for medical assistance patients and is the Federally designated PRO for Maryland (1986) and the District of Columbia (1984).

"Physician Self-Assessment of Primary Care Quality" is funded in part under a contract from the US Department of Health and Human Services/HCFA/HSQB to the Delmarva Foundation for Medical Care, Inc. (Prime Contractor #500-89-0624, Mod5), Harvard University's Quality of Care Research and Education Center, The Johns Hopkins University and Park Nicollet Foundation along with participating organizations the Alabama Quality Assurance Foundation and the Iowa Foundation for Medical Care. The Contract is for "Developing and Evaluating Methods to Promote Ambulatory Quality -- *DEMPAQ*.

The Maryland Academy of Family Physicians.
MAFP represents 75,000 family physicians in the state and serves as their advocate. In academic settings, MAFP assists in creating departments of family medicine to increase the state's future supply of family physicians. MAFP is also involved in legislative issues, patient and professional education support, and provides information on specialty-specific practice trends.

The Maryland Society of Internal Medicine.
The Maryland Society of Internal Medicine is the state medical specialty society for physicians practicing internal medicine and its sub-specialties. Close ties exist with the American Society of Internal Medicine and other medical organizations within the state of Maryland. The focus of the society is on the social, economic, and political developments which affect the practice of medicine rather than solely upon biomedical concerns.

The Medical and Chirurgical Faculty of Maryland.
Med Chi, the Maryland state medical society is a nonprofit organization representing and serving Maryland physicians. Incorporated in 1799 by a special act of the Maryland legislature, Med Chi is one of the oldest state medical associations in the country.

University of Maryland School of Medicine.
Each year the University of Maryland offers a series of continuing education programs focused on the education needs of practitioners in the state and region. While much of the course work follows a traditional format, there is increasing interest in designing programs tailored to specific practice-related processes and outcomes. Members of the Department of Epidemiology and Preventive Medicine work with staffs of the Delmarva Foundation for Medical Care, Inc. and of the Health Care Financing Administration in the design and evaluation of a number of statewide and national health care quality assessment projects.

Western Maryland Area Health Education Center.
The Western Maryland AHEC, affiliated with the University of Maryland at Baltimore, serves as a focal point for clinical experience in rural health delivery for medical residents and students of other health disciplines. In addition, the Center organizes a series of continuing education programs for various health professionals in the tri-county region of Western Maryland.

PROGRAM COST

A modest registration fee of $125.00 for this program covers program materials, light refreshments and seven (7) hours of Category I CME credit. Participants will be on their own for lunch. Those wishing to complete the materials at home must complete a registration application and submit a check for $100. This fee covers the cost of seven (7) category II CME credits. Registration applications will be processed when received with a check made out to the American Medical Review Research Center. Cancellations received before June 14 must be accompanied by a written request after which AMRRC will refund all but a $25 processing fee. Refund requests cannot be processed if received after June 15.

HOTEL INFORMATION

For those Maryland physicians wishing to arrive the prior evening, a block of rooms has been held for the evening of June 29 at the BWI Marriott, 1743 West Nursery Road, Baltimore, Maryland 21240. The meeting rate is $89.00 (single or double). Ask for the AMRRC meeting when calling (410) 859-8300 to make reservations or when faxing to (410) 859-8473. The rooms will be held until MONDAY JUNE 21, 1993, after which hotel rooms will be sold to program participants on the basis of rate and space availability.

ACCREDITATION

The American Medical Review Research Center is accredited by the Accreditation Council for Continuing Medical Education (ACCME) to sponsor continuing medical education programs to physicians. "Physician Self-Assessment of Primary Care Quality" has been designated for up to seven (7) hours of **Category I** credits for the *Physician's Recognition Award* of the American Medical Association.

Physicians unable to attend the workshop may register for self-study **Category II** credits and complete a *DEMPAQ* workbook at home. The necessary registration application form must be submitted to the AMRRC office by the JUNE 4 deadline in order to be eligible to receive up to seven (7) hours of **Category II** CME credit. To receive self-study CME credit, physicians must complete evaluation forms to the satisfaction of the AMRRC CME program and return them to the AMRRC offices by AUGUST 31.

CME credits are being awarded by the American Medical Review Research Center. Additional accredited sponsor awards will be noted as final approvals are received. All requests for CME credit must be sent directly to AMRRC to ensure physicians have completed required workshop evaluations.

REGISTRATION FORM

"Physician Self-Assessment of Primary Care Quality"

Because of the participatory nature of this workshop, attendance must be limited and requires advance registration. The registration cut-off date if **JUNE 4, 1993**. Space will be filled as registration applications accompanied by registration fees are received.

Please (✓) Check One	Registration Fee	
☐ June 30 Workshop	**$125.00**	The fee covers costs related to program materials, the workbook, refreshments and seven (7) hours of Category I CME credit.
☐ Self-Study Program	**$100.00**	The fee covers costs related to program materials, the workbook, and seven (7) hours of Category II CME credit.

Name: ______________________________

Medical Speciality: ______________ Position or Title ______________

Institution or Organization ______________________________

Street Address: ______________________________

City ______________________ State ______________

Phone: ______________________ FAX: ______________

Mail Checks Payable to AMRRC to:

Pamela S. Cheetham, MPH
CME Coordinator
AMRRC
810 First Street, NE, Suite 420
Washington, DC 20002
Phone (202) 289-7657
FAX (202) 371-8954

For Inter-Office Use

Amount Paid ______________
Check # ______________
Date ______________

Amount Enclosed $ ______________________________

All cancellations must be received in writing by June 14, 1993 in order to receive a refund minus a $25 processing fee. For workshop registrations received after spaces have been filled, registrants will be offered the option of self-study with a $25 refund forthcoming if appropriate.

June 4, 1993 Registration Deadline

Appendix 2

A PARTICIPATORY WORKSHOP ON

Physician Self-Assessment of Primary Care Quality

Supporting Organizations

Alabama Chapter - American Academy of Family Physicians
Alabama Quality Assurance Foundation, Inc.
Alabama Society of Internal Medicine
Delmarva Foundation for Medical Care, Inc.
Medical Association of the State of Alabama
University of Alabama School of Medicine

CME Sponsor
American Medical Review Research Center

REGISTER BY SEPTEMBER 7, 1993!

Friday, September 24, 1993

Radisson Hotel-Birmingham
Birmingham, Alabama

American Medical Review Research Center
810 First Street, NE
Suite 420
Washington, DC 20002

FIRST CLASS

Physician Self-Assessment of Primary Care Quality

PROGRAM OBJECTIVES

Primary care physicians will understand the overall objectives of the three year DEMPAQ project to promote professional self-improvement with the aid of tools developed specially for the review of physician office-based care. Physicians will learn and use one of the tools to review medical records. Physicians will understand state-wide practice patterns in ambulatory care provided to the elderly as profiled through Medicare claims and medical records.

GENERAL TOPIC

Quality improvement in primary care: a topic of increasing concern to physicians who wish to initiate quality of care improvements in their offices.

TARGET AUDIENCE

Primary care physicians who provide care to Medicare beneficiaries in their office practice.

DESCRIPTION

This program is a participatory learning workshop in which primary care physicians will be instructed in a quality monitoring self-assessment approach. Participants will conduct a review of their own medical records (physicians who submitted records to the DEMPAQ project) OR of teaching cases. Through didactic presentation, self-completed worksheets and directed discussion, physicians will learn about statewide primary care practice patterns for selected conditions and activities. They will also participate in interactive discussions about the project and self-review results.

PLANNING GROUP MEMBERS

Pink L. Folmar, MD
Internal Medicine
Representative, Alabama Society of Internal Medicine

Laurie T. Hall, MD
Internal Medicine
Medical Advisor
Alabama Quality Assurance Foundation, Inc.

Peter W. Morris, MD
Internal Medicine and Oncology
Immediate Past President
Medical Association of the State of Alabama

Brian A. Perry, MD
Family Practice
Past President Alabama Chapter
American Academy of Family Practice

Robert G. Sherrill, Jr., MD
Medical Director
Alabama Quality Assurance Foundation, Inc

George T. Smith, MD, MS
Associate Dean and Director
Division of Continuing Medical Education
School of Medicine

PROGRAM FACULTY and FACILITATORS

Barbara B. Baites, RN
DEMPAQ Review Coordinator
Alabama Quality Assurance Foundation, Inc.

Carlene D. Gibbons, RN
DEMPAQ Review Coordinator
Alabama Quality Assurance Foundation, Inc.

Ruth Ann Hadley, RN
Clinical CME Staff DEMPAQ Education
American Medical Review Research Center

Van B. Hayne, Jr., MD
Division of Endocrinology/Diabetes Mellitus
Associate Professor of Medicine, School of Medicine
University of Alabama at Birmingham

Ann G. Lawthers, ScD
Research Director DEMPAQ
Harvard School of Public Health

Sandra J. Ray Moentmann, MS, RN
Project Manager DEMPAQ
Delmarva Foundation for Medical Care, Inc.

Suzanne Oparil, MD
Director, Hypertension Program of the
Division of Cardiovascular Disease
University of Alabama at Birmingham
President-Elect American Heart Association

Nadine Schiesz, RN
Director, Education, Quality & Research
Alabama Quality Assurance Foundation, Inc.

Physician Self-Assessment of Primary Care Quality

Friday, September 24, 1993

Radisson Hotel - Birmingham
Birmingham, Alabama

AGENDA

7:00 am - 4:30 pm	**Registration Desk Open**
8:00 am - 8:15 am	**Welcome**
8:15 am - 8:30 am	**Introduction**

The introduction will highlight the collaborative nature of the *DEMPAQ* project, its goal of promoting professional self-improvement, and its focus on group, rather than individual, performance.

8:30 am - 8:45 am **DEMPAQ: A Structural Description**

Physicians will be able to describe how Medicare claims data and medical records were used to determine the practice patterns of Alabama physicians. Understanding will include a sense of how the *DEMPAQ* performance measures were developed.

8:45 am - 9:45 am **Instruction for Self-review of Medical Records**

Physicians will become familiar with the forms used in reviewing medical records and with the workbook containing supporting clinical rationales. They will learn how to apply the review forms, flags, and clinical rationales in the review of actual medical records.

9:45 am - 10:00 am **Break**

10:00 am - 12:00 pm **Self-review Exercise** (Small groups with preceptors)

Physicians will use the forms and accompanying clinical rationales from the workbook to review medical records for selected items. Physicians who submitted records in 1991 will review their own cases. Physicians who have not previously submitted records will review teaching charts that demonstrate common clinical problems.

12:00 pm - 1:00 pm **Lunch (*On Your Own*)**

1:00 pm - 3:00 pm **Alabama Performance Patterns from the Medical Record Review**

Physicians will understand statewide practice patterns by examining and discussing aggregate medical records review data. Physicians will have the opportunity to discuss and share strategies for managing patient care in the ambulatory setting. Clinical experts will be present to answer questions. At the conclusion of the session, participants will be able to read and interpret the *DEMPAQ* reports of the medical record review.

3:00 pm - 3:15 pm **Break**

3:15 pm - 4:15 pm **Patterns in Alabama Medicare Claims Data**

Physicians will be able to read and interpret *DEMPAQ* reports of physician practice patterns, based on Medicare claims information. They will also have a sense of statewide patterns of care, as profiled through claims. Physicians will have an opportunity to comment on their interpretation of the claims data and its significance for their practice.

4:15 pm - 5:00 pm **Review of *DEMPAQ* Reports** (Small groups with preceptors)

Using skills acquired earlier in the workshop, physicians will review reports from the *DEMPAQ* study. They will gain a sense of how their performance compares to that of their peers. Physicians who previously submitted medical records for review will study records and claims reports based on their own data; others will receive reports based on statewide data. Preceptors will answer questions concerning the understanding or interpretation of the data. Physicians will also complete evaluations of the record and claims reports.

5:00 pm - 5:15 pm **Evaluations and Closing Presentations** (Small Groups)

Physicians will complete evaluations of the meeting content and format. Each table will select a representative to convey the impressions of the people seated at the table regarding the organization, content, and usefulness of the workshop. During the presentation of each table's views, physicians will hear how their colleagues reacted to the material presented during the workshop and have the opportunity to discuss and make recommendations concerning the *DEMPAQ* approach to quality improvement.

5:15 pm **Adjourn**

Space Limited - Advance Registration Only!

PROGRAM COST

A modest registration fee of $95.00 for this program covers program materials, refreshments and up to seven (7) hours of **Category 1** CME credit. Those wishing to complete the materials at home must complete a registration application and submit a check for $75. This fee covers the cost of seven (7) **Category 2** CME credits. Registration applications will be processed when received with a check made out to the American Medical Review Research Center. Cancellations received before September 13 must be accompanied by a written request after which AMRRC will refund all but a $25 processing fee. Refund requests cannot be processed if received after September 14.

HOTEL INFORMATION

For those Alabama physicians wishing to arrive the prior evening, a block of rooms has been held for the evening of September 23 at the Radisson Hotel-Birmingham, 808 South 20th Street, Birmingham, AL. The meeting rate is $69.00 (single or double). Ask for the AMRRC meeting when calling (205) 933-9000 to make reservations or when faxing to (205) 933-0920. The rooms will be held until **Friday, September 10, 1993**, after which hotel rooms will be sold to program participants on the basis of rate and space availability.

ACCREDITATION

The American Medical Review Research Center is accredited by the Accreditation Council for Continuing Medical Education (ACCME) to sponsor continuing medical education programs for physicians. Physician Self-Assessment of Primary Care Quality has been designated for up to seven (7) hours of **Category 1 credits for the** *Physician's Recognition Award* of the American Medical Association. CME credits are being awarded by the American Medical Review Research Center.

Physicians unable to attend the workshop may register for self-study **Category 2** credits and complete a *DEMPAQ* workbook at home. The necessary registration application form must be submitted to the AMRRC office by the September 7 deadline in order to be eligible to receive up to seven (7) hours of **Category 2** CME credit. *To receive self-study CME credit, physicians must complete evaluation forms to the satisfaction of the AMRRC CME program and return them to the AMRRC offices by* ***November 30.***

Additional accredited sponsor awards will be noted on the workshop program as final approvals are received. All requests for CME credit must be sent directly to AMRRC to ensure physicians have completed workshop evaluations. The American Academy of Family Physicians has approved this program for prescribed CME credit.

REGISTRATION FORM

Physician Self-Assessment of Primary Care Quality

Because of the participatory nature of this workshop, attendance must be limited and requires advance registration. The registration cut-off date is **September 7, 1993**. Space will be filled as registration applications accompanied by registration fees are received.

Please (✓) Check One	**REGISTRATION FEE**	
☐ September 24 Workshop	$95.00	The fee covers costs related to program materials, the workbook, refreshments and up to seven (7) hours of Category 1 CME credit.
☐ Workbook (Self Study Program)	$75.00	The fee covers costs related to program materials, the workbook, and up to seven (7) hours of Category 2 CME credit.

Name ______________________________

Medical Specialty ______________ Position or Title ______________

Institution or Organization ______________________________

Street Address ______________________________

City ______________ State ________ Zip Code ______________

Phone ______________ FAX ______________

For Inter-Office Use
Amount Paid ________
Check # ________
Date ________

All cancellations must be received in writing by September 13, 1993 in order to receive a refund minus a $25 processing fee. For workshop registrations received after spaces have been filled, registrants will be offered the option of self-study with a $25 refund forthcoming.

September 7, 1993 Registration Deadline

Make Checks Payable to **AMRRC.** Mail to:

AMRRC DEMPAQ CME Coordinator
810 First Street, NE, Suite 420
Washington, DC 20002
Phone (202) 289-7657/FAX (202) 371-8954

Amount Enclosed $______________

Physician Self-Assessment of Primary Care Quality

PROGRAM STAFF

✣ ✣ ✣

Nadine Schiesz, RN
Director, Education, Quality & Research
Alabama Quality Assurance Foundation, Inc.

Robert G. Sherrill, Jr., MD
Medical Director
Alabama Quality Assurance Foundation, Inc.

✣ ✣ ✣

Jean Edwards
Project Director *DEMPAQ*
Delmarva Foundation for Medical Care, Inc.

Sandra J. Ray Moentmann, MS, RN
Project Manager *DEMPAQ*
Delmarva Foundation for Medical Care, Inc.

✣ ✣ ✣

R. Heather Palmer, MD
Director, Center for Quality of Care Research and Education
Principal Investigator *DEMPAQ*
Harvard School of Public Health

Ann G. Lawthers, ScD
Research Director *DEMPAQ*
Harvard School of Public Health

✣ ✣ ✣

David B. Nash, MD, MBA
AMRRC Chairperson

Robert L. Kane, MD
AMRRC Board CME Director

Carole J. Magoffin, MS
Project CME Director *DEMPAQ* Education

Pamela S. Cheetham, MPH
CME Coordinator *DEMPAQ* Education

Ruth Ann Hadley, RN
Clinical CME Staff *DEMPAQ* Education

✣ ✣ ✣

The American Medical Review Research Center
AMRRC, pronounced "am-rock," is a not-for-profit, 501(c)(3) public benefit, research and education organization dedicated to advancing the art and science of quality assurance and quality medical review. AMRRC is a national information, evaluation, testing, and analysis resource for practical tools, methodologies, and programs in quality evaluation. Along with other major projects, AMRRC currently has a three year contract with the Agency for Health Care Policy and Research (AHCPR) to develop, apply and evaluate medical review criteria based on clinical practice guidelines; and to implement and evaluate guideline-based quality improvement educational programs.

Center for Quality of Care Research and Education
The Center is located within the Harvard School of Public Health and is a noncommercial academic center which conducts health system quality of care research. The Center's mission is to develop practical methods for improving the quality of medical care, with a special emphasis on ambulatory care, where the opportunities for prevention and early detection are greatest. The Center is staffed by experts in clinical medicine, public health, management science, biostatistics, computer science, and sociology. Seminars and training are frequently offered to medical professionals and managers.

The Delmarva Foundation for Medical Care, Inc.
Incorporated in 1973, DFMC's mission is to advance quality health care through education, research and evaluation. DFMC maintains review responsibilities for medical assistance patients and is the federally designated PRO for Maryland (1986) and the District of Columbia (1984).

Physician Self-Assessment of Primary Care Quality is funded in part under a contract from the US Department of Health and Human Services/HCFA/HSQB to the Delmarva Foundation for Medical Care, Inc. (Prime Contractor #500-89-0624, Mod5), Harvard University's Quality of Care Research and Education Center, The Johns Hopkins University and Park Nicollet Foundation along with participating organizations: the Alabama Quality Assurance Foundation (AQAF); and the Iowa Foundation for Medical Care. The contract is for **D**eveloping and **E**valuating **M**ethods to **P**romote **A**mbulatory **Q**uality (*DEMPAQ*).

The Alabama Quality Assurance Foundation, Inc.
Alabama Quality Assurance Foundation (AQAF) has served as the federally designated peer review organization (PRO) for the state of Alabama since 1984 and is an independent, non-profit corporation. The foundation began as the Professional Standards Review Organization in 1972 under the state's Medical Association for the State of Alabama (MASA). Responsibilities as the PRO include review of health care services received by Medicare beneficiaries to determine whether the services are medically necessary, furnished at the appropriate level of care, and of a quality that meets professionally recognized standards of care.

The Alabama Chapter - American Academy of Family Physician
Founded in 1949, the Alabama Chapter of the American Academy of Family Physicians now has more than 1,081 members in the state. The Academy respresents it members in the legistlative and public relations arenas, and in addition to conducting an annual meeting, provides such services as a quarterly magazine and continuing medical education programs.

The Alabama Society of Internal Medicine
The Alabama Society of Internal Meidcine (AlaSIM) is the state medical specialty society for physicians practicing internal medicine and its sub-specialties. AlaSIM's primary mission is to promote the optimal delivery of cost-effective, high quality care by providing internists with a statewide federation to study and respond to the social, economic and political forces affecting the cost, quality and availability of their services to patients. AlaSIM is a component society of the American Society of Internal Medicine.

University of Alabama School of Medicine, UAB Division of Continuing Medical Education
The University of Alabama School of Medicine (UASOM) provides continuing medial education to enhance and maintain the professional and interpersonal skills of physicians inn Alabama and other southeastern states. The Division of Continuing Medical Education for UASOM's three compuses (Birmingham, Tuscaloosa and Huntsville and affiliated hospitals.

Working with various organizations across the state and region, the Division of CME provides a full range of educational offerings using a wide variety of educational delivery systems. Offerings include outreach CME in communities across Alabama , audio and video conferencing, videotape programs, correspondence CME, mini-residences and other self-study options designed to meet the targeted needs of the regions' health professional population.

The Division of CME provides National and International programs in clinical areas complimentary to the international reputation of the University of Alabama at Birmingham. The Division also pursues an agenda that includes the encouragement and support of CME research in the areas of needs assessment, evaluation and learning preferences of practicioners.

The Division of CME is accredited by the Accreditation Council for Continuing Medical Education to provide continuing medical education for practicing physicians.

The Medical Association of the State of Alabama
The Medical Association of the State of Alabama representing some 5,400 physicians, was formed in 1873 to promote and preserve the highest standards of professional education and moral conduct for practitioners of medicine.

Association policies are formulated by a 336 member college of Counsellors and House of Delegates, and governed by 7 officers and 12 Censors.

Appendix 3

A PARTICIPATORY WORKSHOP ON

Physician Self-Assessment of Primary Care Quality

Supporting Organizations

Delmarva Foundation for Medical Care, Inc.
Iowa Foundation for Medical Care
Iowa Academy of Family Physicians
Iowa Clinical Society of Internal Medicine
Iowa Medical Society
Iowa Osteopathic Medical Association

CME Sponsor

American Medical Review Research Center
University of Iowa College of Medicine

REGISTER BY OCTOBER 11, 1993!

ednesday, October 27, 1993

Holiday Inn, Downtown
1050 Sixth Avenue
Des Moines, Iowa

American Medical Review Research Center
810 First Street, NE
Suite 420
Washington, DC 20002

FIRST CLASS

Physician Self-Assessment of Primary Care Quality

Wednesday, October 27, 1993

Holiday Inn - Downtown
Des Moines, Iowa

AGENDA

7:00 am - 4:30 pm **Registration Desk Open**

8:00 am - 8:15 am **Welcome**

8:15 am - 8:30 am **Introduction**

The introduction will highlight the collaborative nature of the *DEMPAQ* project, its goal of promoting professional self-improvement, and its focus on group, rather than individual, performance.

8:30 am - 8:45 am ***DEMPAQ*: A Structural Description**

Physicians will be able to describe how Medicare claims data and medical records were used to determine the practice patterns of Iowa physicians. Understanding will include a sense of how the *DEMPAQ* performance measures were developed.

8:45 am - 9:45 am **Instruction for Self-review of Medical Records**

Physicians will become familiar with the forms used in reviewing medical records and with the workbook containing supporting clinical rationales. They will learn how to apply the review forms, flags, and clinical rationales in the review of actual medical records.

9:45 am - 10:00 am **Break**

10:00 am - 12:00 pm **Self-review Exercise**
Small groups with preceptors

Physicians will use the forms and accompanying clinical rationales from the workbook to review medical records for selected items. Physicians who submitted records in 1991 will review their own cases. Physicians who have not previously submitted records will review teaching charts that demonstrate common clinical problems.

12:00 pm - 1:00 pm **Lunch *(On Your Own)***

1:00 pm - 3:00 pm **Iowa Performance Patterns from the Medical Record Review**

Physicians will understand statewide practice patterns by examining and discussing aggregate medical records review data. Physicians will have the opportunity to discuss and share strategies for managing patient care in the ambulatory setting. Clinical experts will be present to answer questions. At the conclusion of the session, participants will be able to read and interpret the *DEMPAQ* reports of the medical record review.

3:00 pm - 3:15pm **Break**

3:15 pm - 4:15 pm **Patterns in Iowa Medicare Claims Data**

Physicians will be able to read and interpret *DEMPAQ* reports of physician practice patterns, based on Medicare claims information. They will also have a sense of statewide patterns of care, as profiled through claims. Physicians will have an opportunity to comment on their interpretation of the claims data and its significance for their practice.

4:15 pm - 5:00 pm **Review of *DEMPAQ* Reports**
(Small groups with preceptors)

Using skills acquired earlier in the workshop, physicians will review reports from the *DEMPAQ* study. They will gain a sense of how their performance compares to that of their peers. Physicians who previously submitted medical records for review will study records and claims reports based on their own data; others will receive reports based on statewide data. Preceptors will answer questions concerning the understanding or interpretation of the data. Physicians will also complete evaluations of the record and claims reports.

5:00 pm - 5:15 pm **Evaluations and Closing Presentations**
(Small Groups)

Physicians will complete evaluations of the meeting content and format. Each table will select a representative to convey the impressions of the people seated at the table regarding the organization, content, and usefulness of the workshop. During the presentation of each table's views, physicians will hear how their colleagues reacted to the material presented during the workshop and have the opportunity to discuss and make recommendations concerning the *DEMPAQ* approach to quality improvement.

5:15 pm **Adjourn**

HOTEL INFORMATION

For those Iowa physicians wishing to arrive the prior evening, a block of rooms has been held for the evening of October 26 at the Holiday Inn - Downtown, 1050 Sixth Avenue, Des Moines, Iowa. The meeting rate is $55.00 single or $65.00 double. Ask for the AMRRC meeting when calling (515)283-0151 to make reservations. The rooms will be held until **Tuesday, October 5, 1993,** after which hotel rooms will be sold to program participants on the basis of rate and space availability.

REGISTRATION FEES

The fee for this workshop is $95.00. The fee covers registration, workshop materials, refreshments, and awarding of Category 1 continuing medical education credit. Registrations will be processed in the order they are received by the American Medical Review Research Center (AMRRC). Early registration is encouraged because of limited enrollment.

Physicians interested in reporting this activity as Category 2 credit via the self-study option should complete the Registration Form and submit it, along with a check for $75.00, to AMRRC. DEMPAQ workbooks and evaluation forms will be sent to physicians choosing this option. In order for the seven (7) hours of Catergory 2 credit to be awarded, the evaluation forms must be successfully completed and returned to AMRRC by **November 30, 1993**.

CONTINUING MEDICAL EDUCATION CREDIT

The University of Iowa College of Medicine is accredited by the Accreditation Council for Continuing Medical Education to sponsor continuing medical education for physicians.

The University of Iowa College of Medicine designates this continuing medical education activity for 7.0 credit hours in Category 1 of the Physician's Recognition Award of the American Medical Association.

This program has been reviewed and is acceptable for 7.0 prescribed hours by the American Academy of Family Physicians.

Note: Physicians unable to attend the workshop may participate in a self-study version of the workshop and earn 7.0 hours of AMA Category 2 credit through the American Medical Review Research Center in Washington, DC.

The American Medical Review Research Center is accredited by the Accreditation Council for Continuing Medical Education to sponsor continuing medical education for physicians.

The American Medical Review Research Center designates the self-study option of this continuing medical education activity for 7.0 credit hours in Category 2 of the Physician's Recognition Award of the American Medical Association.

REFUNDS

All but $25.00 of the $95.00 fee is refundable if inability to attend is made known in writing on or before October 15, 1993. For those physicians whose registrations are received after enrollment capacity has been reached, the self-study option or a refund will be offered.

REGISTRATION FORM

Physician Self-Assessment of Primary Care Quality

Because of the participatory nature of this workshop, attendance must be limited and requires advance registration. The registration cut-off date is **October 11, 1993**. Space will be filled as registration applications accompanied by registration fees are received.

Please (✓) Check One	**Registration Fee**	
☐ October 27 Workshop	$95.00	The fee covers costs related to program materials, the workbook, refreshments and seven (7) hours of Category 1 CME credit.
☐ Workbook (Self Study Program)	$75.00	The fee covers costs related to program materials, the workbook, and seven (7) hours of Category 2 CME credit.

Name ______________________________

Medical Specialty ______________ Position or Title ______________

Institution or Organization ______________________________

Street Address ______________________________

City ____________ State ______ Zip Code ______________

Phone ____________ FAX ______________

For Inter-Office Use
Amount Paid ______
Check # ______
Date ______

All cancellations must be received in writing by October 15, 1993 in order to receive a refund minus a $25 processing fee. For workshop registrations received after spaces have been filled, registrants will be offered the option of self-study with a $25 refund forthcoming.

Registration Deadline: October 11, 1993

Make Checks Payable to **AMRRC. Mail** to:

AMRRC DEMPAQ CME Coordinator
810 First Street, NE, Suite 420
Washington, DC 20002
Phone (202) 289-7657/FAX (202) 371-8954

Amount Enclosed $ ______________

Physician Self-Assessment of Primary Care Quality

PROGRAM OBJECTIVES

Primary care physicians will understand the overall objectives of the three year DEMPAQ project to promote professional self-improvement with the aid of tools developed specially for the review of physician office-based care. Physicians will learn and use one of the tools to review medical records. Physicians will understand state-wide practice patterns in ambulatory care provided to the elderly as profiled through Medicare claims and medical records.

GENERAL TOPIC

Quality improvement in primary care: a topic of increasing concern to physicians who wish to initiate quality of care improvements in their offices.

TARGET AUDIENCE

Primary care physicians who provide care to Medicare beneficiaries in their office practice.

DESCRIPTION

This program is a participatory learning workshop in which primary care physicians will be instructed in a quality monitoring self-assessment approach. Participants will conduct a review of their own medical records (physicians who submitted records to the DEMPAQ project) OR of teaching cases. Through didactic presentation, self-completed worksheets and directed discussion, physicians will learn about statewide primary care practice patterns for selected conditions and activities. They will also participate in interactive discussions about the project and self-review results.

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Physician Self-Assessment of Primary Care Quality

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The American Medical Review Research Center
AMRRC, pronounced "am-rock," is a not-for-profit, 501(c)(3) public benefit, research and education organization dedicated to advancing the art and science of quality assurance and quality medical review. AMRRC is a national information, evaluation, testing, and analysis resource for practical tools, methodologies, and programs in quality evaluation. Along with other major projects, AMRRC currently has a three year contract with the Agency for Health Care Policy and Research (AHCPR) to develop, apply and evaluate medical review criteria based on clinical practice guidelines; and to implement and evaluate guideline-based quality improvement educational programs.

Center for Quality of Care Research and Education
The Center is located within the Harvard School of Public Health and is a noncommercial academic center which conducts health system quality of care research. The Center's mission is to develop practical methods for improving the quality of medical care, with a special emphasis on ambulatory care, where the opportunities for prevention and early detection are greatest. The Center is staffed by experts in clinical medicine, public health, management science, biostatistics, computer science, and sociology. Seminars and training are frequently offered to medical professionals and managers.

The Delmarva Foundation for Medical Care, Inc.
Incorporated in 1973, DFMC's mission is to advance quality health care through education, research and evaluation. DFMC maintains review responsibilities for medical assistance patients and is the federally designated PRO for Maryland (1986) and the District of Columbia (1984).

Physician Self-Assessment of Primary Care Quality is funded in part under a contract from the US Department of Health and Human Services/HCFA/HSQB to the Delmarva Foundation for Medical Care, Inc. (Prime Contractor #500-89-0624, Mod5), Harvard University's Quality of Care Research and Education Center, The Johns Hopkins University and Park Nicollet Foundation along with participating organizations: the Alabama Quality Assurance Foundation (AQAF); and the Iowa Foundation for Medical Care. The contract is for **D**eveloping and **E**valuating **M**ethods to **P**romote **A**mbulatory **Q**uality (*DEMPAQ*).

Iowa Foundation for Medical Care
Since 1971, the IFMC's mission has been to work in concert with providers, business and government to ensure that all patients served receive high quality, cost-effective care. The IFMC is the peer review organization for the states of Iowa and Nebraska. Together with its wholly owned subsidiary, the Sunderbruch Corporation, the IFMC is a diversified health management services company with hundreds of government and private business clients nationwide, operating multiple review sites in four states.

Iowa Academy of Family Physicians
The Iowa Academy of Family Physicians represents 1,500 physicians, residents and students and serves as their advocate. The Academy was incorporated in 1947 to provide continuing education for their members.. Each active member must complete 150 hours of CME every three years to retain his/her membership. The Academy is also involved in legislative issues on behalf of its members.

Iowa Clinical Society of Internal Medicine
The Iowa Clinical Society of Internal Medicine is the state medical specialty society for physicians practicing internal medicine and its sub-specialties. It is the Iowa chapter for the American Society of Internal Medicine and other medical organizations within the state of Iowa. The focus of the society is on the social, economic, and political developments which affect the practice of medicine rather than solely upon biomedical concerns.

Iowa Medical Society
The Iowa Medical Society, whose membership includes the majority of Iowa's practicing physicians, was founded in 1850. It is the middle component of the medical profession's organizational pyramid which includes the American Medical Association at the national level and a network of 93 county medical societies at the local level. At the heart of this structure is the individual physician. The IMS exists to advance medical science and promote enactment of fair medical laws and regulations. The Society's most important and long-standing goal is protecting the health of Iowans through a variety of projects and activities at the state and national levels.

Iowa Osteopathic Medical Association
The business, object and purposes of this Society or Corporation shall be to promote the public health, and the art and science of medical education in osteopathic colleges in all scientific branches of medicine; to advocate such measures as will alleviate the suffering, improve the health and protect and promote the quality of human life; to be part of the American Osteopathic Association; to federate, bring together and organize the osteopathic profession of the State of Iowa; to elevate and maintain high standards of Osteopathic medical education; to assist students worthy of such assistance by establishing loan funds or being the trustees of scholarship funds, or any other method that the Board of Trustees shall approve; to encourage the enactment and enforcement of just laws for the protection of the public.

University of Iowa College of Medicine
Continuing medical education (CME) is offered by the University of Iowa College of Medicine to assist practicing physicians and other health professionals in the life-long process of maintaining and enhancing clinical knowledge and skills that will result ultimately in the best possible health status of their patients.

Appendix 4

American Medical Review Research Center
Physician Self-Assessment of Primary Care Quality

Maryland DEMPAQ Workshop Evaluation Results

Overall Evaluation Strategy. As the pilot of the DEMPAQ CME workshops, the Maryland program is critical in providing a means of gaging how format and content will be viewed by physician participants in the two CME workshops scheduled for Alabama in September and for Iowa in October. Comments and criticism by Maryland participants will be the impetus for revamping the program for use in the other two states.

The evaluation form used for the Maryland workshop is a three part questionnaire. Part I (11 questions, 1 of them two-part) and Part II (8 questions, 5 of them two-part and 1 three-part) use the Likert scale, with 1 being strongly disagree and 5 being strongly agree. A response of 3 is interpreted as neither agree nor disagree.

Part I is an overall workshop evaluation covering general impressions of the workshop as a whole. Part II evaluates how well each speaker accomplished the objectives set for his or her portion of the program. Part III solicits input on time, cost, and difficulty and asks for comments and suggestions on content for future workshops.

Part I	responses from the 15 participating physicians and 4 physician faculty members were tallied, then run on the Paradox statistical program (SPSS), and inserted into a WordPerfect table. N = 19 for this section.
Part II	responses from 19 respondents (15 physician workshop participants and 4 physician members of the workshop faculty) are included in our tables and analysis.
Part III	covers the suggestions of fifteen of the 16 participating physicians (13 DEMPAQ and 2 nonDEMPAQ), i.e., those who completed the evaluation form.

Maryland Pilot Program CME Evaluation Results

The pilot DEMPAQ workshop was held on Wednesday, June 30, 1993 at the Baltimore Washington International Airport Marriott Hotel. A total of 41 persons attended the day long workshop.

PART I Overview

Responses to the eleven questions were overwhelmingly positive. The chart that follows shows the percent of physician participants and faculty that agreed or strongly agreed to each of the eleven questions/statements. It is more significant that 95% of respondents felt they left with an understanding of DEMPAQ's objective of developing self-assessment and feedback tools for the review of office based care and they felt the workshop provided adequate opportunities for them to participate in the learning process. Almost 90% of the physicians said the workshop helped them understand DEMPAQ's objective of promoting professional self-improvement.

84.2% of respondents agreed the workshop was worth the time invested and that they would incorporate the workshop information into their own clinical practice. There were only isolated responses in the Strongly Disagree or Disagree category to any question -- and in fact out of a total of 55 responses (11 questions, 5 possibilities) from the 19 respondents, there was only one response by one participant in the category of "Strongly Disagree." While the noncommittal category 3 (Neither Agree Nor Disagree) included more responses than we would have preferred, for example 26.3% (5 of 19) of the respondents neither agreed nor disagreed with statement #6, "The workshop presented clinically valid information on quality of care review of primary practice" -- this was nonetheless consistent with the appraisal of staff that more time should be allocated to discuss individual clinical review questions for each physician's own charts. The same number (5 of 19) and percent (26.3) chose a response of #3 to statement #11, "I would recommend this workshop to others."

The pilot numbers are obviously too small to draw conclusions from the percentages. They have been helpful to staff in confirming impressions about the perceived need for modifications as had been expected. An average of 15 of 19 total respondents agreed/strongly agreed with every one of the overall evaluation questions, and an average of only 3 of the 19 gave non-committal (but definitely not negative) responses. For a first time pilot program this a strong endorsement of the entire program.

PART I: OVERALL WORKSHOP EVALUATION

		Agree or Strongly Agree	Total N
1.	The workshop helped me understand the importance of quality monitoring and management in clinical practice.	68.9%	13 of 19
2.	The workshop helped me understand the overall DEMPAQ objective of developing self-assessment and feedback tools for the review of physician office based care.	94.8%	18 of 19
3a.	The workshop taught me one method of quality self-assessment.	78.9%	15 of 19
3b.	The workshop helped me understand DEMPAQ's objective of promoting professional self-improvement.	89.5%	17 of 19
4.	The workshop presented information I can use in my clinical practice.	78.9%	15 of 19
5.	The workshop *content* was well organized.	79%	15 of 19
6.	The workshop presented clinically valid information on quality of care review of primary practice.	73.6%	14 of 19
7.	I plan to incorporate the information learned at this workshop into my clinical practice.	84.2%	16 of 19
8.	The workshop provided adequate opportunities for me to participate the learning process.	94.8%	18 of 19
9.	The meeting facility was adequate.	100%	19 of 19
10.	The workshop was worth the time invested	84.2%	16 of 19
11.	I would recommend this workshop to others.	68.5%	13 of 19

DEMPAQ Maryland CME Workshop Evaluation Results

Part 1: OVERALL WORKSHOP EVALUATION

QUESTION NUMBER	Strongly Disagree # (%)	Disagree # (%)	Neither # (%)	Agree # (%)	Strongly Agree # (%)
1. Improved understanding of Q in clin. practice	0(0.0)	2(10.5)	4(21.1)	6(31.6)	7(36.8)
2. Impr. understanding of DEMPAQ objective re: tools	0(0.0)	0(0.0)	1(5.3)	9(47.4)	9(47.4)
3a. Taught 1 Q assessment method	0(0.0)	0(0.0)	4(21.1)	8(42.1)	7(36.8)
3b. Impr. understanding of DEMPAQ objective re: self-assessment	0(0.0)	0(0.0)	2(10.5)	9(47.4)	8(42.1)
4. Info. useful to clin. practice	0(0.0)	1(5.3)	3(15.8)	7(36.8)	8(42.1)
5. Content well-organized	0(0.0)	0(0.0)	4(21.1)	9(47.4)	6(31.6)
6. Presented clinically valid info.	0(0.0)	0(0.0)	5(26.3)	7(36.8)	7(36.8)
7. Will incorporate info. in practice	0(0.0)	1(5.3)	2(10.5)	8(42.1)	8(42.1)
8. Provided oppor. to participate	0(0.0)	0(0.0)	1(5.3)	9(47.4)	9(47.4)
9. Facility adequate	0(0.0)	0(0.0)	0(0.0)	10(52.6)	9(47.4)
10. Worth time invested	0(0.0)	2(10.5)	1(5.3)	8(42.1)	8(42.1)
11. Would recommend workshop	1(5.3)	0(0.0)	5(26.3)	5(26.3)	8(42.1)

19 Responses
4 Physician Faculty
15 Physicians Participants
(13 DEMPAQ Physicians/2 Non-DEMPAQ Physicians)

American Medical Review Research Center
Maryland DEMPAQ CME

DEMPAQ Maryland CME Workshop Evaluation Results

Part II: WORKSHOP EVALUATION SESSION OBJECTIVES

QUESTION NUMBER	Strongly Disagree # (%)	Disagree # (%)	Neither # (%)	Agree # (%)	Strongly Agree # (%)	Responses/ Total participants
1. Introduction -J.W.Zebley, MD	0(0.0)	0(0.0)	3(15.8)	10(52.6)	6(31.6)	19/19
2. Physician's Perspective on DEMPAQ & QI in MD						
V.R.Felipa, MD	1(5.9)	2(11.8)	6(35.3)	6(35.3)	2(11.8)	17/19
C.Marino, MD	0(0.0)	1(5.9)	4(23.5)	8(47.1)	4(23.5)	17/19
3. DEMPAQ: Structural Desc A.G.Lawthers, ScD						
a. Able to desc. how DEMPAQ uses data	0(0.0)	0(0.0)	1(5.3)	15(78.9)	3(15.8)	19/19
b. Outline how DEMPAQ perf. meas. developed	0(0.0)	1(5.3)	3(15.8)	10(52.6)	5(26.3)	19/19
4. Patterns in MD Medicare Claims Data - A.G.Lawthers, ScD						
a. Claims info helped me understand prac. patterns to elderly	0(0.0)	0(0.0)	4(21.1)	10(52.6)	5(26.3)	19/19
b. Able to read/interpret DEMPAQ reports	0(0.0)	0(0.0)	4(22.2)	9(50.0)	5(27.8)	18/19
5. Inst. for Self-Review of Med Records - S.J.R.Moentmann, MS,RN						
a. Become familiar with self assessment worksheet	0(0.0)	1(5.3)	5(26.3)	7(36.8)	6(31.6)	19/19
b. Workbook clear/easy to understand	1(5.3)	0(0.0)	6(31.6)	8(42.1)	4(21.1)	19/19
c. Learned how to apply criteria to own records	1(5.6)	0(0.0)	5(27.8)	5(27.8)	7(38.9)	18/19
6. Self-review Exercise						
a. Able to use worksheet and workbook	0(0.0)	0(0.0)	5(26.3)	7(36.8)	7(36.8)	19/19
b. Adequate morning instruction for self review	0(0.0)	2(11.1)	4(22.2)	7(38.9)	5(27.8)	18/19

QUESTION NUMBER	Strongly Disagree # (%)	Disagree # (%)	Neither # (%)	Agree # (%)	Strongly Agree # (%)	Responses/ Total participants
7. Selected Clinical Topics						
a. focus on how my performance compares with other PCPs						
i. HBP/DM-J.W.Zebley, MD	0(0.0)	2(10.5)	3(15.8)	9(47.4)	5(26.3)	19/19
ii. COPD-S.Goldgeier, MD	0(0.0)	1(5.6)	4(22.2)	9(50.0)	4(22.2)	18/19
b. learned to use pt. mgmt. in my practice						
i. HBP/DM-J.W.Zebley, MD	1(5.6)	1(5.6)	5(27.8)	5(27.8)	6(33.3)	18/19
ii. COPD-S.Goldgeier, MD	1(5.9)	1(5.9)	6(35.3)	4(23.5)	5(29.4)	17/19
8. Closing Presentations						
a. learned how colleagues reacted to workshop material	0(0.0)	0(0.0)	2(14.3)	7(50.0)	5(35.7)	14/19
b. valued chance to make recommendations on DEMPAQ approach	0(0.0)	0(0.0)	2(14.3)	5(35.7)	7(50.0)	14/19

N = 19 Physicians (15 physician participants,4 physician faculty) Not every question was answered by each participant.

PART II

The second section of the evaluation form asked about how well each speaker did in achieving the objectives set for the session for which he or she was responsible. Part II contained 8 questions/statements (all but one of which was multi-part). Not every participant answered each question and percentages were calculated using a Paradox statistical package that provides valid percentages, taking into account missing data. In the chart above, the last column shows how many participants answered each question. Generally, the responses were very positive. Of 18 separate questions/statements and 19 respondents, i.e., 342 potential responses, we received only 5 "Strongly Disagree" responses and only 12 "Disagree" responses. The statement with the greatest number and percentage of responses (either positive or negative) was 3a.,"I am able to describe how DEMPAQ used Medicare claims data and medical records to profile Maryland physician practice patterns." Of the 19 physicians who responded to that statement, 15 (78.9%) said they agreed with it. An additional 3 participants said they strongly agreed with that statement. The remaining 1 respondent, anwered with the neutral, "Neither". There were no negative responses. The other areas covered by Dr. Lawthers were also well-received, in terms of the frequency of responses of either agree or strongly agree. Question 3b., "I am able to to outline how DEMPAQ performance measures were developed", elicited 15 responses (78.9%) of agree or strongly agree.

PART III

Responses received from 15 of the 16 physician participants (13 DEMPAQ and 2 nonDEMPAQ) have been analyzed for the last portion of the evaluation questionnaire. This part of the form gave physicians an opportunity to critique the level of difficulty, length, the workshop fee, favorite speakers/features, and suggestions. Eleven (66%) thought the workshop was the right level of difficulty. When asked about the time allotted for the workshop, 71% (10 of 14 respondents) thought it was the right length. In terms of how much the workshop was worth, 11 respondents ranged from $50 to $150 to "Price should be no object." Somewhere in the range of $100 most frequently suggested (8). The most popular speaker was Dr. Zebley, who was listed by 6 of 14 respondents (43%). Dr. Goldgeier was named by 4 respondents (28.5%) as their favorite speaker.

The other 4 questions in Part III were open ended and responses were wide ranging. All comments have been listed under the corresponding question. One theme seems to be a desire for more feedback on specific problem areas from peers as well as experts. Several physicians indicated that working through a problem case, as a group, would be useful.

Breakout of Workshop Attendees

	Totals	**Eval. In**
Physician Participants	16	15
DEMPAQ Physicians	14	13
NonDEMPAQ Physicians	2	2
Faculty	12	4
Physician	9	4
Nonphysician	3	0
Other Staff	3	0
Total Number of Persons In Attendance	41	
Outstanding DEMPAQ MD eval.	1	

****

Specialties of Participating Physicians	16
Family Practice	6
Internal Medicine	7
Emergency Medicine	1
General Practice	2

* If physicians listed more than one specialty, the first one listed was used to categorize the physician.

Of the 16 physicians registered as participants, 14 were considered DEMPAQ participants, i.e., they had previously submitted medical records to the Delmarva Foundation for Medical Care for review and analysis. The other two physician workshop participants did not take part in the earlier DEMPAQ record/practice assessment and one of these paid the registration fee. In addition, of the 11 guests attended the workshop, five were physicians and of the 12 faculty members, 9 were physicians. The remaining 3 workshop attendees were AMRRC and Delmarva staff members, nonphysician. A total of 19 evaluation forms were completed at the workshop by physicians: 11 of the 14 DEMPAQ physicians; 2 non-DEMPAQ physicians; 2 of the 5 physician guests; and 4 of the nine physician preceptors and/or faculty.

3 DEMPAQ physicians who did not complete evaluation forms at the workshop were contacted after the workshop and as a result, 2 of the 3 outstanding evaluation forms have been received from DEMPAQ physicians. The third is expected, since receipt of CME credits is contingent upon completion of the program evaluation form.

American Medical Review Research Center
Maryland DEMPAQ CME

DEMPAQ Maryland CME Workshop
Evaluation Results

PART III : QUESTIONS AND COMMENTS

Responses are from 15 physician participants (13 DEMPAQ and 2 non-DEMPAQ)

1. The level of the workshop content was: (Please circle one response)

	Responses	Total = 15
a. Too simple	1	
b. Just right	11	
c. Too complex	2	
No Response	1	

2. The time allotted for the workshop was: (Please circle one response)

	Responses	Total = 14
a. Too little	0	
b. Just right	10	
c. Too much	4	

3. The fee for DEMPAQ'S Physician participants was covered by the research contract funding. The $125 fee was paid by those who had not previously sent in medical records. If there are to be future workshops a registration fee would be required to cover all operational costs. Please estimate the fee you think your colleagues would be willing to pay for the kind of training provided in this workshop, along with the 7.00 CME credits $______________?

$ Amount Suggested	Responses	Total = 11
Price should be no object	1	
50	1	
75	1	
75-100	1	
85-100	1	
100	3	
100-150	1	
125	1	
150	1	

Additional Comments.

- They're unlikely to pay
- Hudson's intro (15 mins) too long
- Felipa offered no insight into his subject, many reviewer errors in flagging
- Physicians will be reluctant to lose a day's practice for the workshop unless specifically required

4. What could be done DIFFERENTLY to encourage more participation by primary care physicians in this type of workshop (e.g., content, longer lead time, location, sponsorship, format, faculty and/or staff, length of workshop etc)?

- Give out flyers first to explain about the conference
- Announce at my hospital department of Med. Mtg., no info came to my office (non-Dempaq Doc)
- Outstanding for the first time
- Workshop info, many PCPs are unaware of office QA issues
- Longer lead time, "Keep it simple"
- ER doc
- Include urgent care cases
- Word announcement that indicate that this type of review is definitely coming in the future and that forewarned is forearmed
- Holding workshops in difference areas of the state is a way to reach more primary care physicians
- Office nurses/managers should be allowed to participate in workshop

5. Please identify any speakers or workshop features you particularly liked.

	Responses	Total = 14
Goldgeier	4	
Hamilton	3	
Zebley	6	
Lawthers	1	

- All speakers are very good
- The prompt and courteous assurance provided by this workshop personnel

6. Please suggest how the subject areas might be better presented in the future.

- It would be nice to get feedback on what we did during the workshop
- Consider a Saturday
- Present to MDA of FP in OC next year
- Give us more feedback on how our charts compared to our peers in the area, where is more documentation needed
- Make briefer
- Reviews should be practical
- Give examples for self evaluation
- Have worksheets in front of us, go through 2-3 example points rather than explaining and samples
- Well presented but lacked practical points we need in our practice
- It was satisfactory as done
- Suggestions by DEMPAQ on how to improve the quality of record keeping by primary care physicians by using flow sheets with every chart

7. What other changes should be made before the workshop is presented again?

- Send introductory pub or brochure to Dr.'s offices
- Should have different criteria for evaluating primary care at "urgent" level, otherwise not practical to review charts from an urgent care practice criteria for long term practice of chronically ill patients
- Shorten discussion of HTN, COPD, Diabetes
- Studies on new patient seen by a Dr. for the following 2-3 years
- Obscure drug-drug reactions should be left out
- NSAIDS probably most dangerous drugs in common use
- Reviewers problem charts might help others if they were discussed by the group
- Discuss osteoarthritis
- Discussion of COPD, Diabetes was below my level
- NEJM recently reviewed "current advances in COPD" in a 2 part feature, for example
- Instructions to physicians on how to self evaluate their charts (which had been Scrutinized) weekly before the actual date of the workshop, so that the flagging can be more thoroughly discussed

8. Please provide any other suggestions or comments regarding the overall conference and meeting site.

- Appropriate and centralized
- Would have liked more discussion on overall result of the study
- Where are the big pitfalls?
- Less didactic/academic medicine practice and more feedback or review with individual participants on their cases
- Easy to find
- Good site
- Conference is well organized and site is fine
- Near a large metro center, Bethesda, Rockville might be good
- I think that in reality most MDs practice good medicine, this actually just makes me realize we don't document well enough for legal and Delmarva purposes
- Site was very convenient
- Conference content will influence the way I keep my charts from now on
- Longer lunch break
- Longer small groups discussion to better evaluate other physicians reaction to workshop material

Appendix 5

Physician Self-Assessment of Primary Care Quality
Alabama CME Workshop Evaluation Results

Overall Evaluation Strategy. The Maryland program was a pilot of the program structure, materials, organization, and evaluation tools. Comments and evaluations from the Maryland participants were considered a pilot to the Alabama and Iowa programs and were used to revamp the program for the other two states.

The evaluation questionnaire, however, required only the revisions necessary to accommodate changes in the organization and presentation of the workshop program. These changes were minor for the basic evaluation tool drafted by AMRRC evaluation expert C. Susan Beavert, PhD, MSPH. The evaluation remained in three parts: Part I (11 questions, 1 of them in two parts); Part II (8 questions with revisions in which 4 [versus 5] were two-part questions, one three-part question and one question revised to become a four-part question); and Part III which solicits input on time, cost and difficulty and asks for comments and suggestions on content for future workshops.

Physician Specialty. Workshop CME participants included 2 internists (one a participating DEMPAQ physician and 1 an internist faculty member from the state medical society) and 6 family practitioners. The 7 actual CME registrants who attended the workshop, as well as 3 no-show registrants, were all participating DEMPAQ physicians. The HCFA physician representative indicated he was a pediatrician. Since CME workshop marketing by state physician groups could not be monitored, correlations could not be drawn or reasons attributed to the lack of non-DEMPAQ physician participation and the level of state physician group support for the initiative. 1,000 brochures were made available for the PRO to distribute to each society. The project, still in research phases, considers the CME exploration part of overall feasibility field testing.

Part I workshop responses from the 7 of Alabama's 100 DEMPAQ participating physicians [note: 11 physicians registered for home study for a total of 18/100 responses to the educational opportunity], 1 faculty member from the state medical society, and 1 HCFA physician (pediatrician) were tallied, then run on the paradox statistical program (SPSS), and inserted into a WordPerfect table. N = 9 for this section except for one question which was skipped by the HCFA participant which is appropriate since it is likely he is no longer in clinical practice. As the tool contained one numerical questions error (two questions numbered #3) the tabulations are for 3a and 3b.

Part II responses from the 9 physician respondents described above are included in our tables and analysis.

Part III covers the suggestions of the 9 physician respondents, 7 of whom were participating DEMPAQ physicians and two non (one faculty member and one HCFA physician representative), who completed evaluations.

The Alabama workshop on "Physician Self-Assessment of Primary Care Quality" was held on September 24, 1993 at the Birmingham, Alabama Radisson Hotel. A total of 7 participating DEMPAQ physicians and one faculty physician will receive CME credit. Evaluations include a 9th (HCFA) physician response as this was his first viewing of the research initiative.

PART I Overview
Responses to the eleven questions were even more overwhelmingly positive than the Maryland workshop evaluations. Virtually all respondents felt the workshop helped them understand the importance of quality monitoring and management in clinical practice with almost a fourth of that group agreeing very strongly. In terms of understanding DEMPAQ self-assessment and feedback tool objectives in reviewing physician office care, all respondents agreed the workshop helped them to understand DEMPAQ objectives and 55% strongly agreed it helped them. Participants were very positive in their responses also to the fact that the workshop helped them understand one method of quality self-assessment. With the exception of being provided with an opportunity to participate, the question receiving the most strongly favorable ratings was that they did in fact intend to use the information presented in their *personal clinical* practice. Since the one non-practicing physician participant did not answer this question the response rate is very legitimate, considering only those physicians in active office practice.

100% either agreed or strongly agreed that the workshops was well organized. The only deviation from agreement for the entire overall evaluation was in the area of clinical validity in which 22 % of the participants (N= 2 of 9) disagreed somewhat. This could be followed up in terms of the genesis of their discomfort possibly being related to lack of time for developing clinical consensus and full exploration of the foundation of criteria development.

Everyone agreed that the facility was adequate, the workshop was worth the time invested, and that they would recommend the workshop to their colleagues. These are much higher ratings than the pilot workshop. All faculty felt the program re-organization allowing for increasing time for participant interplay was a key factor in reducing the possibility of stimulating defensive behavior by participants and encouraging productive, interactive exchanges.

While the small number of workshop participants (7 DEMPAQ/2 other compared to 15 DEMPAQ/4 other) cannot be explained, faculty all reported a more relaxed ambiance and attitude for the Alabama workshop -- again difficult to explain since all the project staff were equally unsatisfied with the meeting site hotel. Thus one would not attribute the overall feeling of satisfaction to any feature of the site itself. Faculty did feel they were able to spend more time one-on-one with the Alabama physicians since it was such a small group. Other questions we cannot answer are the attitudes of the Alabama physicians to their PRO. Those attending could easily be a self-selected group (e.g. the past medical society president who participated is also a past president of the PRO), or it could be indicative of good relations with physician groups in Alabama. Nonetheless, no non-DEMPAQ physicians participated.

PART II Session Objectives

Dr. Hall ranked quite highly in starting the day as the voice of an Alabama/local physician. All agreed the faculty performed extremely well, according to the 8 program evaluation questions which were broken down carefully into 17 parts to insure questions addressed singular concepts or topics. Out of the entire day participants agreed faculty had met the pre-stated objectives with only one exception. On one sub-portion of question 2b where a small amount of time was allotted for outlining how the DEMPAQ performance measures were developed, some physicians (22% N = 2) indicated they were unsure they could outline how the performance measures were developed. This honest response can provide information needed for follow-up which is an opportunity. Both respondents were family practitioners, but these responses should not be considered quantitative data. They are qualitative in that we are interested in exposing all differences and difficulties, in terms of understanding the opportunities and difficulties presented if office-based self-assessment workshops were conducted on a larger scale in different states or settings.

Dr. Lawthers description of how claims data and medical records were used to profile Alabama physician practice patterns, and the discussion of Alabama patterns of care for hypertension and diabetes in the elderly had the highest rankings (77.8 and 75 %) in terms of participants strongly agreeing that they could understood and could describe this information/data. Clearly something may also be indicated here about the way in which interest is obviously peaked when discussing data from a physicians own state, versus national information. The self-review exercises with their own records was also ranked very high 55% - 66% strongly agreeing with the rest agreeing), even though this is typically a labor intensive effort on the part of physicians. A little more uncertainty was reflected about whether they were going to be able to interpret the DEMPAQ reports, but still the responses were very strongly positive. Everyone agreed they learned a lot simply hearing the reactions of their colleagues and they valued the opportunity to make recommendations regarding the DEMPAQ approach to quality improvement.

PART III

Responses received from the nine physicians (7 DEMPAQ/1 faculty/1 HCFA physician) have been reviewed for the last portion of the evaluation questionnaire. This part of the form gave physicians an opportunity to critique the level of difficulty, length, the workshop fee (no one paid a fee, as all were on scholarship -- but were asked to speculate were they to get this from their usual sources), favorite speakers/features, and suggestions.

All but one physician felt the workshop content was just right, and one felt it might (placed a question mark by his response) have been too complex. One physician wrote that the content was just right but that the "amount" was too much to digest in one day. Another physician commented on the complexity of the information. All but one physician felt the time allotted was just right and this one physician felt the time allotted was too much. This physicians overall evaluation indicated he strongly agreed he had understood most of the substantive areas and less clear rankings were in the interactive areas such as hearing from his colleagues. He was the one physician that disagreed somewhat with the clinical validity of the criteria.

The later physician, along with two others recommended regional meetings to encourage participation. The average range of prices participants were willing to pay was between $50 ($75 if lunch was included) to a top of $125. Without outside subsidization, it would be very difficult to conduct these seminars for this cost unless clinicians at the state levels could be trained in making the presentations and a cadres of physicians and/or researchers developed for making the key presentation. The HCFA physician indicated the price might be as high as $250 which is the higher value placed upon it by one Maryland PRO physician. While those involved in the project are all placing a higher monetary value on the information and the uniqueness of the workshop, this does not seem to be the case for the average physician registering for these workshops. Several office managers and quality assurance personnel have shown interest however have not ended up participating.

The reviews were very positive. Few comments were made in part three but their content is included for review.

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DEMPAQ Alabama CME Workshop Evaluation Results

Part 1: OVERALL WORKSHOP EVALUATION

QUESTION NUMBER	Strongly Disagree # (%)	Disagree # (%)	Neither # (%)	Agree # (%)	Strongly Agree # (%)
I1. Improved understanding of Q in clin. practice	0	0	4 (44.4)	3 (33.3)	2 (22.2)
I2. Impr. understanding of DEMPAQ objective re: tools	0	0	1 (11.1)	3 (33.3)	5 (55.6)
I3a. Taught 1 Q assessment method	0	0	1 (11.1)	4 (44.4)	4 (44.4)
I3b. Impr. understanding of DEMPAQ objective re: self-assessment	0	0	1 (11.1)	3 (33.3)	5 (55.6)
I4. Info. useful to clin. practice	0	0	0	3 (37.5)	5 (62.5)
I5. Content well-organized	0	0	0	4 (44.4)	5 (55.6)
I6. Presented clinically valid info.	0	2 (22.2)	2 (22.2)	3 (33.3)	2 (22.2)
I7. Will incorporate info. in practice	0	0	1 (11.1)	2 (22.2)	6 (66.7)
I8. Provided oppor. to participate	0	0	0	2 (22.2)	7 (77.8)
I9. Facility adequate	0	0	1 (11.1)	3 (33.3)	5 (55.6)
I10. Worth time invested	0	0	2 (22.2)	3 (33.3)	4 (44.4)
I11. Would recommend workshop	0	0	2 (22.2)	3 (33.3)	4 (44.4)

Total n = 9 respondents; 1 faculty MD, 1 HCFA MD (pediatrician), 7 participating physicians (5 FP, 1 IM, 1 GP).

PART II: WORKSHOP EVALUATION - SESSION OBJECTIVES

QUESTION NUMBER	Strongly Disagree No./%	Disagree	Neither	Agree	Strongly Agree
II1. Introduction - Hall	0	0	0	3 (33.3)	6 (66.7)
II2a. DEMPAQ Structure: Profiling - Lawthers	0	0	2 (22.2)	0	7 (77.8)
II2b. DEMPAQ Structure: Perf. Meas. - Lawthers	0	2 (22.2)	0	2 (22.2)	5 (55.6)
II3a. Self-Review: Worksheet - Moentmann	0	0	1 (12.5)	2 (22.2)	6 (66.7)
II3b. Self-Review: Workbook - Moentmann	0	0	2 (22.2)	4 (44.4)	3 (33.3)
II3c. Self-Review: Criteria Application - Moentmann	0	0	1 (12.5)	2 (25.0)	5 (62.5)
II4a. Self-Review Exercise: Able to review cases	0	0	2 (22.2)	2 (22.2)	5 (55.6)
II4b. Self-Review Exercise: Preparation adequate	0	0	2 (22.2)	2 (22.2)	5 (55.6)
II5a. AL Patterns: Understand state patterns	0	0	2 (22.2)	4 (44.4)	3 (33.3)
II5b. AL Patterns: Discussed study results	0	0	1 (12.5)	1 (12.5)	6 (75.0)
II5c. AL Patterns: Info. useful in clinical practice	0	0	3 (37.5)	2 (25.0)	3 (37.5)
II5d. AL Patterns: Able to interpret DEMPAQ reports	0	0	2 (22.2)	3 (33.3)	4 (44.4)
II6a. AL Medicare claims patterns - Lawthers Understand state ambulatory care patterns	0	0	2 (22.2)	3 (33.3)	4 (44.4)
II6b. AL Medicare claims patterns - Lawthers Able to interpret DEMPAQ reports	0	0	4 (44.4)	2 (22.2)	3 (33.3)
II7. Able to compare performance to others	0	0	3 (33.3)	2 (22.2)	4 (44.4)
II8a. Closing: Learned colleagues' reaction	0	0	1 (11.1)	4 (44.4)	4 (44.4)
II8b. Closing: Made recommendations to process	0	0	1 (11.1)	4 (44.4)	4 (44.4)

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PART III: QUESTIONS AND COMMENTS

(n=9)

1. "The level of the workshop content was:"

	Responses	% (total n = 15)
a. Too simple	0	0%
b. Just right	8	66.6%
c. Too complex	1	33.3%

2. "The time allotted for the workshop was:"

	Responses	% (total n = 15)
a. Too little	0	33.3%
b. Just right	8	53.3%
c. Too much	1	13.3%

3. "...Please estimate the fee you think your colleagues would be willing to pay for the kind of training provided in this workshop, along with the 7.00 CME credits." [total number of participants responding = 7 (77.7%)]

Amount suggested	# Responses
a. Price no object	0
b. $50 - $75	4
c. $76 - $100	1
d. $101 - 150	1
e. over $150	1 ($250)

Comments about training program fee: [total # of participants who commented = 1 (11.1%)]

- "Explanation good; maybe a little too complex for short time."

4. "What could be done differently to encourage participation?" [total # of participants who commented = 5 (55.5%)]

   - "Location; could be held in several states."
   - "Take more regional approach (i.e., Huntsville, Tuscaloosa as opp. to Mobile)
   - "Emphasize quality vs. review."
   - "Try to develop more sponsorship; include more specialty societies/academic leaders."
   - "Pre-inform them of the purpose."

5. "Please identify any speakers or workshop features you particularly liked." [total # of participants who commented = 4 (44.4%)]

   - All speakers were good - 2 participants
   - "Use of computer database with logic schemes."
   - "Dr. Lawthers."

6. "Please suggest how subject areas might be better presented in the future." [total # of participants who commented = 3 (33.3%)]

   - "Avoid overkill on controversial medical topics. Focus on process, set up, review of more generally accepted QA criteria."
   - "Emphasize claims based analysis for outpatient quality; many physicians got into detailed clinical and chart discussions."
   - "Discussions such as Dr. Van Hayne were good; showed how even specialists make some of the mistakes we make in rural areas."

7. "What other changes should be made before the workshop is presented again?" [total # of participants who commented = 1 (11.1%)]

   - "Not enough time to make really informed decisions."

8. "Please provide any other suggestions or comments regarding the overall conference and meeting site." [total # of participants who commented = 2 (22.2%)]

   - "Good meeting."
   - "Galleria - Wyndham hotel."

Appendix 6

Physician Self-Assessment of Primary Care Quality
Iowa Workshop Evaluation Results

Physician Specialty. Workshop participants included the following:

	DEMPAQ	NON-DEMPAQ	
internal medicine	2	0	
family practice	5	2 (one faculty member)	
general practice	3	0	
DO	2	1 (faculty)	
	12	**3**	**TOTAL N = 15**

None of the 5 faculty physicians not completing evaluations were participating DEMPAQ physicians. Of the 5 no-shows (one called to ask for the book) 4 were family physicians and 1 a general practitioner. 1,000 brochures were made available for the PRO to distribute to each society. The project, in research mode, considers the CME to be an exploratory part of overall feasibility field testing.

Part I workshop responses are available 11 of Iowa's 62 DEMPAQ participating physicians and DOs; and 4 non-participating physicians and DOs. Note that 8 participating physicians are registered for home study along with 1 participating DO (N=9 registrants) for a total of 19/62 responses to the brochure offering an educational self-assessment opportunity. Keep in mind however, many of the home study participants may not complete their materials. As before the responses were tallied and run on the paradox statistical program, and inserted into a Word Perfect table. Missing items are noted on this evaluation which are generally indicative of one particular physician who skipped the overall evaluation page.

Part II responses from the 15 respondents described above are included in our tables and analysis

Part III covers the suggestions of the 15 physician respondents, 11 of whom are participating DEMPAQ physicians (2 of the 11 are DOs) and 4 non-DEMPAQ participants (1 faculty family physician, 2 registered family physicians, and 1 faculty DO) completed evaluations.

The Iowa workshop on "Physician Self-Assessment of Primary Care Quality" was held on October 27, 1993 at the Downtown Holiday Inn, Des Moines, Iowa. A total of 15 physicians and DOs will receive CME credit. Of those 11 participating DEMPAQ physicians, 2 were DOs.

Part I Overview

One cannot help initially but be struck by the dichotomous responses on the Iowa Evaluations. Overall the initial assessment seems to be the Iowa physicians were a "tough crowd." Interestingly, even though virtually 100% agreed or strongly agreed that the faculty was adequate, and close to 75% felt the information would be useful to clinical practice (despite an apparent split with 3 disagreeing and 1 strongly disagreeing), fully one third said they would not incorporate the information into clinical practice. Of course, two-thirds said they would. 99% also said the workshop was worth the time invested, and then 75% said they would recommend it to others. One would logically expect the figures to be similar but a definite "stubborn streak" or unmeasurable undercurrent is apparent. One always speculates that perhaps the relationship the PRO has or has not been able to establish with the medical community might be a factor. Iowa is a very large state geographically -- making it almost impossible for a central organization to generate close ties to a large community of independent physicians.

Compare the Following:

	Total Q's Answered +	Total Q's Answered -	%Neg
Maryland(N=19)	228	6	.026%
Alabama (N=7)	125	2	.016%
Iowa (N-15)	180	24	.13 %

Essentially 85% of the questions were answered positively, but the skewing and contradictions make the comparison with the other states difficult. For example, one might say that when there are fewer participants who are able to get one on one attention (e.g. Alabama) there is an opportunity for warmer interpersonal interaction. Iowa also had a relatively small number of support staff compared to Maryland. Yet the anecdotes are difficult to integrate into any measurement. For example the Alabama physician laughing, throwing his head back in wonderment and saying out loud -- "I can't believe I wrote this!" His attitude was not defensive nor were those of the other participants according to the staff. Iowa responses include a reasonable number of non-committal (neither) responses which seems to indicate something other than the faculty, program organization or something endemic to the workshop.

Part II Session Objectives

This section also indicates a certain ambivalence and/or resistance since participants are very positive about faculty and objectives being met. 100% liked their introduction from Kevin deReigner, DO and all but one (mildly disagreed) was positive about Dr. Lawthers presentations on profiling and the DEMPAQ performance measures. 100% started off positive with Sandy Moentmann's explanation of the worksheets, but a couple of participants seemed to fall behind as self-review progressed and the day wore on. All but one person was positive about the presentations of Iowa practice pattern information and again a couple more fell off as the discussion went on. However, positive percentages were still in the 90s. Everyone seemed to catch up with 100% being positive about the discussion of Iowa ambulatory Medicare claims data and everything on the afternoon program.

Reviewing the individual evaluations, some individuals gave absolutely everything 4's and 5's. The same 2/15 physicians out of the whole seemed to be resistent, despite the fact they liked the faculty and many aspects of the workshop -- almost like they came not expecting to have a positive experience. The positive responses to individual presentations are almost all above the 90% mark, except when the two having difficulty had it at the same time, creating in a couple of instances a 13.3% negative response.

Obviously the numbers are quite small and a number of qualitative lessons have been learned. One of them has been that each facilitated learning experience is unique and can never be the same as the last. Therefore, maintaining continuity among faculty and planners has been critical to eliminating as many uncertain factors as possible, and has helped continue the positive learning curve while working actively with the physician groups.

Part III Questions and Comments

Iowa physicians ranked the highest of the three workshop in expressing feelings that the workshop content was too complex -- one-third. This may provide some insight into the resistance or difficulty they might have been having. No one thought the material was too simple. Fully another third thought too little time was allotted, and about half thought it was just right. Two frustrated and unnamed persons felt the time allotted was too much.

Once again it is apparent no physician feels the quality assurance learning experience is worth a lot of money to them. No one commented on whether they would even pay for the workshop if they had to (DEMPAQ participants). Some wished for volunteers to walk through cases and mentioned reactions the jargon terms (DEMPAQ e.g.). One physician honestly indicated it is going to take time to convince physicians that this kind of record review is going to be educational or helpful to them in the future.

In terms of speakers three cited Dr. Lawthers as outstanding, but one person felt they did not come away understanding how the parameters were developed. Others wanted more time and less material. A future thinker indicated that when this type of CME is accepted -- leaving the implication it will be some time in the future -- they would like to see this information fed back to reinforce why certain care should be given, apparently making the link to outcomes for the future and ongoing feedback through similar workshops.

Three people cited the meeting as excellent/good. One physician was very critical of what he judged as reviewer errors (3 in 4 charts) and his feeling that "perfectly adequate" care often fell out. It would be interesting to note with follow-up on outcomes if this judgement would persist.

DEMPAQ Iowa CME Workshop Evaluation Results

Part 1: OVERALL WORKSHOP EVALUATION

(n = 15*)

QUESTION NUMBER	Strongly Disagree # (%)	Disagree # (%)	Neither # (%)	Agree # (%)	Strongly Agree # (%)	Missing*
I1. Improved understanding of Q in clin. practice	1 (7.1)	4 (28.6)	1 (7.1)	4 (28.6)	4 (28.6)	1
I2. Impr. understanding of DEMPAQ objective re: tools	0	1 (7.1)	1 (7.1)	7 (50.0)	5 (35.7)	1
I3a. Taught 1 Q assessment method	0	1 (7.1)	2 (14.3)	7 (50.0)	4 (28.6)	1
I3b. Impr. understanding of DEMPAQ objective re: self-assessment	0	0	3 (23.1)	6 (46.2)	4 (30.8)	2
I4. Info. useful to clin. practice	1 (7.1)	3 (21.4)	2 (14.3)	2 (14.3)	6 (42.9)	1
I5. Content well-organized	0	0	4 (28.6)	5 (35.7)	5 (35.7)	1
I6. Presented clinically valid info.	1 (7.1)	1 (7.1)	4 (28.6)	5 (35.7)	3 (23.1)	1
I7. Will incorporate info. in practice	0	5 (35.7)	1 (7.1)	2 (14.3)	6 (42.9)	1
I8. Provided oppor. to participate	1 (7.7)	0	4 (30.8)	2 (15.4)	6 (46.2)	2
I9. Facility adequate	0	0	3 (21.4)	4 (28.6)	7 (50.0)	1
I10. Worth time invested	0	1 (7.7)	3 (23.1)	4 (30.8)	5 (38.5)	2
I11. Would recommend workshop	0	4 (28.6)	1 (7.1)	3 (23.1)	6 (42.9)	1

* Total n = 15 participants. Missing values reflect 1 physicians' ommission of entire overview page and other physicians skipping question(s).

Respondent characteristics: 1 faculty physician, 1 faculty osteopath, 13 registrants (DEMPAQ physicians - 2 IM, 5 FP, 3 GP; DEMPAQ osteopaths - 2; non-DEMPAQ physicians - 2 FP; 1 osteopath faculty).

PART II: WORKSHOP EVALUATION - SESSION OBJECTIVES
(n=15)

QUESTION NUMBER	Strongly Disagree # (%)	Disagree # (%)	Neither # (%)	Agree # (%)	Strongly Agree # (%)	Missing # (%)
II1. Introduction - deReigner	0	0	3 (20.0)	6 (40.0)	6 (40.0)	0
II2a. DEMPAQ Structure: Profiling - Lawthers	0	1 (6.7)	2 (13.3)	9 (60.0)	3 (20.0)	0
II2b. DEMPAQ Structure: Perf. Meas. - Lawthers	0	1 (6.7)	3 (20.0)	8 (53.3)	3 (20.0)	0
II3a. Self-Review: Worksheet - Moentmann	0	0	3 (20.0)	7 (53.8)	4 (26.7)	0
II3b. Self-Review: Workbook - Moentmann	0	2 (13.3)	3 (20.0)	7 (46.7)	3 (20.0)	0
II3c. Self-Review: Criteria Application - Moentmann	0	1 (6.7)	2 (13.3)	6 (40.0)	6 (40.0)	0
II4a. Self-Review Exercise: Able to review cases	1 (6.7)	1 (6.7)	1 (6.7)	4 (26.7)	8 (53.3)	0
II4b. Self-Review Exercise: Preparation adequate	1 (6.7)	0	3 (20.0)	5 (33.3)	6 (40.0)	0
II5a. IA Patterns: Understand state patterns	0	1 (6.7)	6 (40.0)	5 (33.3)	3 (20.0)	0
II5b. IA Patterns: Discussed study results	1 (6.7)	1 (6.7)	4 (26.7)	7 (46.7)	2 (13.3)	0
II5c. IA Patterns: Info. useful in clinical practice	2 (13.3)	0	3 (20.0)	6 (40.0)	4 (26.7)	0
II5d. IA Patterns: Able to interpret DEMPAQ reports	0	1 (6.7)	5 (33.3)	5 (33.3)	4 (26.7)	0
II6a. IA Medicare claims patterns - Lawthers Understand state ambulatory care patterns	0	0	7 (50.0)	6 (42.9)	1 (7.1)	1
II6b. IA Medicare claims patterns - Lawthers Able to interpret DEMPAQ reports	0	1 (7.1)	4 (28.6)	7 (50.0)	2 (14.3)	1
II7. Able to compare performance to others	0	1 (7.1)	6 (42.9)	5 (35.7)	2 (14.3)	1
II8a. Closing: Learned colleagues' reaction	0	0	3 (23.1)	7 (53.8)	3 (23.1)	[illegible]
II8b. Closing: Made recommendations to process	0	1 (7.7)	3 (23.1)	4 (30.8)	5 (38.5)	2

PART III: QUESTIONS AND COMMENTS

(n=15)

1. "The level of the workshop content was:"

	Responses	% (total n = 15)
a. Too simple	0	0%
b. Just right	10	66.6%
c. Too complex	5	33.3%

2. "The time allotted for the workshop was:"

	Responses	% (total n = 15)
a. Too little	5	33.3%
b. Just right	8	53.3%
c. Too much	2	13.3%

3. "...Please estimate the fee you think your colleagues would be willing to pay for the kind of training provided in this workshop, along with the 7.00 CME credits." [total number of participants responding = 9 (60.0%)]

Amount suggested	# Responses
a. Price no object	0
b. $50 - $75	5
c. $76 - $100	3
d. $101 - 150	1
e. over $150	0

Comments about training program fee: (total # of participants who commented = 0)

4. "What could be done differently to encourage participation?" [total # of participants who commented = 7 (46.6%)]

- Have workshop in local area (i.e., one each in eastern and western Iowa) - 2 participants
- Have physicians voluntarily review a group of their own cases from each

category (condition) - 2 participants

- "Include more information about quality."
- "Less jargon such as DEMPAQ; tell doctors what it really is in plain language."
- "The nature of the workshop should be explained and it will take time for physicians to believe that record review will be educational."

5. "Please identify any speakers or workshop features you particularly liked." [total # of participants who commented = 10 (66.6%)]

   - All speakers were good - 3 participants
   - Liked evaluating their own patient care - 3 participants
   - Dr. Lawthers - 3 participants
   - "Panel on diabetes."
   - "Between state comparisons."
   - "Need better speakers to discuss how parameters were developed."

6. "Please suggest how subject areas might be better presented in the future." [total # of participants who commented = 5 (33.3%)]

   - More time and/or less material - 2 participants
   - "Limit extra discussion."
   - "When physicians accept the methodology, would like to see CME that would present data of corrent performance then a lecture by expert to reinforce why certain care should be given."
   - "More family practice aspect."

7. "What other changes should be made before the workshop is presented again?" [total # of participants who commented = 5 (33.3%)]

   - "More time on results, less time on these evaluation forms."
   - "Note the educational value."
   - "Spend more time on the *Monitoring Quality of Primary Care* book."
   - "More time on chart review and education; more pertinent to clinical practice."
   - "Provide specific aspects of medical standard of care."

8. "Please provide any other suggestions or comments regarding the overall conference and meeting site." [total # of participants who commented = 6 (40%)]

   - Excellent/good meeting - 3 participants
   - "Recommend hotel in the suburbs."
   - "My confidence in the data went down dramatically after seeing the criteria and performing the self-review. Perfectly adequate care 'fell out' of the criteria too often and there were at least 3 reviewer errors in just 4 charts. Not satisfied that the approach will work or be helpful or accurate."
   - "Please include information on AOA credit; there are over 600 D.O.s in Iowa and 50,000 nationwide."

Chapter 4
CME Workbook

Abstract
The CME workbook represents the major tangible educational product of the DEMPAQ CME effort. Its design was based on adult learning theory. The workbook contained all the necessary instructions to conduct a self-review of quality and provided physicians with a reference document about appropriate ambulatory care guidelines.

The CME workbook is the major tangible educational product of the DEMPAQ CME effort. The workbook provides the necessary instructions and materials to conduct a structured self-review of performance. The workbook construction was based on adult learning theory (Holcomb and Garner, 1973; Garner and Burch, 1974) and designed to facilitate the self-directed education process. The CME workbook also serves as a reference regarding appropriate *minimum* guidelines for ambulatory practice.

We chose a self-instructional medium as a key component of the CME package for several reasons. First, it would allow the physician to proceed at his or her own pace. Second, the workbook was devised to enable for the physician to become engaged as an active participant in the learning process. The workbook also provided opportunities for the physician to pursue information on topics of special clinical interest. Finally, since the workbook would be used at home as well as during a workshop, the book needed to be completely self-explanatory.

Workbook Organization

The workbook was organized into sections, each formatted for quick reference. Section and subsection tabs were used to facilitate identifying and locating necessary information. The criteria section used subsection tabs which were slightly narrower and of a different color from the section tabs. This helped distinguish the criteria portion of the book from the instructional materials.

The major sections of the workbook included:

- Introduction;
- Using Review Materials;
- Conducting the Review;
- Examples;
- Criteria; and
- Decision Rules.

Introduction

The first section opened with a concise statement of the purpose and objectives of the workbook. The objectives were carefully constructed to adhere to specific principles for adult learning, such as, "Decide specifically what you want the learner to be able to do when he has completed the instructional activity" (Holcomb and Garner, 1973, p. 9). Next followed a list of materials required to complete the self-study. This was important to orient the reader, particularly the home study reader, to the tools needed to proceed. The introduction was followed by a brief overview of the structure of the DEMPAQ review. This overview provided background information as well as an introduction to terms the learner would be exposed to throughout the book.

Using the Review Materials, Conducting the Review, and Examples

The "Using the Review Materials" section supplied detailed descriptions of the self-assessment worksheets and defined terms found on the worksheets. "Conducting the Review" provided step-by-step instructions on how to conduct the DEMPAQ self-review. Portions of the actual review worksheet were inserted in the text to illustrate the points. Special review situations were also covered. The "Examples" section illustrated each of the flag evaluation options with clinical examples.

Criteria

The criteria section supplies the measures for conducting the self-review. The material is annotated with references to standard medical texts. The criteria pages are organized by function and clinical item, and within clinical item, by flag. All criteria are included in the workbook, not just those relevant to a particular physician's flags.

The criteria section begins with "Help Sheets" tables listing all the DEMPAQ functions and indicators, and the codes and flags used on the worksheets. Subsections within the criteria section delineate DEMPAQ functions. Immediately behind each function tab are copies of the computer screens showing the review questions and scoring options used by the initial reviewers of the office chart. In the middle of each computer screen is a blank window where the specific review criteria appeared. Behind the drug tab is a complete listing of the drugs reviewed by DEMPAQ, according to type, generic and trade names.

Following the data entry screens are sheets that display the criteria that appeared in the box in the middle of the computer screen. The sheets are organized according to clinical item. Each clinical item has several "flags," corresponding to the DEMPAQ indicators. The criteria for each "flag" or indicator are grouped within a double lined box. To further facilitate the review, the review question is restated at the top of each box of criteria.

Decision Rules

The final section of the workbook contains the various decisions rules used by the initial nurse abstractors in conducting the review. These rules include date conventions, definition of monitoring intervals, and detailed lists of what to review and diagnostic synonyms.

Using the Workbook

The workbook was designed to be used in three situations:

- During a special CME workshop;
- As part of a home study program; and
- As a clinical reference document.

CME Workshop

The workbook was used in each of the three CME workshops conducted as part of the DEMPAQ Feedback and Education Phase. Each physician attending the workshop received a workbook, four of the office records he or she submitted to the project (or four teaching cases if the attendee was a non-DEMPAQ participant), and worksheets corresponding to the records.

The records were selected to illustrate issues in the management of diabetes and hypertension. If the physician lacked cases with suitable flags, charts with multiple flags were selected to provide the physician with practice in reviewing flags. Two sets of teaching charts were pulled. For the Maryland workshop, eight Alabama charts were selected and for the Alabama and Iowa workshops, eight Maryland charts were pulled. The teaching charts then had all physician and patient identifiers removed.

Using the workbook, each physician at the workshop reviewed the records and evaluated the flags identified on the worksheet. See page 19 of the workbook (Appendix 1) for an example of the worksheet.

Home Study Use

Physicians completing the Category 2 CME credit at home read through the first four sections of the workbook prior to beginning the self-review. These sections provided detailed instructions for conducting the review. Since very few physicians actually completed the course of home study, the results are not presented here. Two of those who completed the packet at home cited the need for a telephone "hot line" to assist physicians in completing the worksheets.

Reference Document

The third use of the CME workbook was as a reference document. The criteria section of the workbook contained detailed clinical rationales, with references, for the criteria used by the project. A physician desiring information about beta blocker indications, for example, would turn to the drug subsection of the criteria section. First, he or she would find beta-blocker on the list of DEMPAQ reviewed drugs and locate the DEMPAQ code for beta blockers. All drugs in the criteria section were organized numerically by code. The physician would then turn to the appropriate page which contained a list of all the major indications for beta blockers.

Summary

The CME workbook represents the major tangible educational product of the DEMPAQ CME effort. The workbook design was based on adult learning theory and fostered self-directed learning where the physicians became involved in the process. The workbook contained all the necessary instructions to conduct a self-review of quality and provided physicians with a reference document about appropriate ambulatory care guidelines.

Appendix 1

Monitoring Quality of Primary Care: A Self-Assessment Workbook

September 24, 1993

Introduction

Directions for use

This workbook presents information about the DEMPAQ Quality Review System (DQRS). Opportunities are provided to conduct your own medical record review using project criteria applied to previously scored medical records. The book is designed to enable you, upon completion, to evaluate the usefulness of the DQRS to improve your own medical practice.

Purpose and Objectives

The overall purpose of this workbook is to assist you in improving the care provided to patients in your office through evaluation of your patient's medical records. Upon completion of this workbook you will be able to:

- Explain "function" as it relates to the DEMPAQ Quality Review System (DQRS) and give examples of the functions reviewed.
- Explain "clinical item" as it relates to the DQRS and give examples of items reviewed.
- Explain "indicator" as it relates to the DQRS and give examples of the indicators included in the review.
- Evaluate DEMPAQ project criteria by reviewing "flags" generated by the DQRS.
- Evaluate the usefulness of this review toward quality improvement in your own medical practice.

Materials

Materials needed to complete this self-instructional module include:

- This workbook.
- Self-Assessment Worksheets.
- Medical records previously scored using DQRS.

  If you submitted records for DQRS review, the patients whose charts were reviewed and selected for inclusion in this exercise are identified on the top of the Self-Assessment worksheets.

  If you did not submit records for DQRS review, a set of teaching charts will be provided for your review.

Structure of the DEMPAQ Review

The DEMPAQ record review takes an in-depth look at patterns of care given to elderly Medicare patients in physicians' offices. The framework of the record review system is outlined below.

Functions

The DEMPAQ record review tool is built around clinical activities that are commonly performed in the course of an office visit. These activities are called **functions** by the DEMPAQ project. The following functions are reviewed:

- Prescribing and monitoring a **drug**
- Making a **diagnosis**
- Responding to an abnormal **test**
- Performing **preventive** or **screening** services
- **Follow-up** of serious health threats
- Ordering or performing a **procedure**
- **Documentation** in the medical record

Clinical Items

A specific diagnosis (e.g. diabetes mellitus), drug (e.g. ACE inhibitor), test or procedure is called a **clinical item.** The diagnoses selected for the Diagnosis function represent prevalent conditions among the elderly which account for significant morbidity. Similarly, drugs reviewed for the Drug function were selected because they are commonly prescribed for the elderly population.

Indicators

Assessing the quality of medical care involves examining key sub-tasks of a function. For example, three important tasks associated with the Diagnosis function are:

- Monitoring a pre-existing diagnosis
- Making a new diagnosis
- Searching for treatable causes or comorbidities of a diagnosis

These key sub-tasks are known as **indicators.** Indicators measure important aspects of the clinical processes that effect patient outcomes. The DEMPAQ indicators are shown with their corresponding functions on page 21 in the Criteria section.

Criteria

To evaluate the quality of care, unique review criteria have been developed for each clinical item/indicator combination (see figure 1). The criteria express the specific clinical details which represent appropriate performance of an indicator. Of course, the actions which represent appropriate monitoring for a pre-existing diagnosis of diabetes differ from the appropriate monitoring actions for ischemic heart disease (see figure 2). Figure one shows the general relationship between indicators and clinical items while figure two displays the relationship for the diagnosis function.

Criteria for Indicators: The Basic Format

	Item 1	**Item 2**	**Item 3**	**Item 4**	**Item 5**
Indicator 1	specific criteria				
Indicator 2			specific criteria		
Indicator 3		specific criteria			specific criteria

Figure 1

Criteria for Indicators: Diagnosis

	Diabetes	**HTN**	**IHD**	**CHF**	**COPD**	**OA**
Old diagnosis monitoring	HgbA1C, etc.		Heart Exam, etc.			
Indications for new Dx	FBS>140		Chest Pain, etc.			
Search for cause/comorb	Steroids		HTN, etc.			

Figure 2

Data Collection and Scoring

Sample

You were invited to participate in the DEMPAQ project because your name was randomly chosen from a list of all primary care physicians who provided services to Medicare patients in Maryland. The list was generated from Medicare claims data. With the letter of invitation, we included a listing of 25 of your Medicare patients. Like you, the patients had been randomly selected. We asked for photocopied records of the 25 patients for a two year window:

July 1, 1989, through June 30, 1991. The charts were mailed to the Delmarva Foundation for Medical Care, Inc. (DFMC) for review.

DQRS Review

The review was accomplished with a computerized record review system developed specifically for the DEMPAQ project, called DQRS. Review criteria were stored in special data dictionaries and called into the computer program as needed. These review criteria were developed with advice and comments from the major primary care medical societies in each of the three study states. In Maryland, the groups were the Medical-Chirurgical Faculty of Maryland, the Maryland Society of Internal Medicine, and the Maryland Association of Family Physicians. Criteria were originally derived from guidelines and standard medical texts, but were revised in several cycles of review by the above mentioned physicians.

Reviewers at the DFMC abstracted charts over a five month period. A five percent random sample of charts were re-reviewed by a second reviewer to make sure the abstraction rules were being followed consistently. In addition, approximately 400 records were reviewed by physicians using a structured peer review form to determine whether the review criteria were relevant and useful for assessing the quality of care in a particular case.

Scoring

After the completion of the review, each finding was assigned one of five scores: met, acceptable alternative, not applicable, not reviewable, and flag.[1] A special computer program then calculated the acceptable performance rate on each item, indicator and function. The formula for percent acceptable performance is:

$$\%\text{ acceptable performance} = \frac{(\text{Met} + \text{Acceptable Alternatives})}{(\text{Met} + \text{Acceptable Alternatives} + \text{Flag})}$$

Summary rates were first calculated at the patient level and then averaged across all patients. This ensured that no single patients would unduly influence the summary rate.

---

[1] **Met**: meets the criterion exactly
Acceptable Alternative: did not meet the criterion for a set of pre-defined reasons, e.g., patient refusal
Not Applicable: the criterion does not apply to this case
Not Reviewable: the time frame for records data was insufficient to review this item for this case
Flag: the case did not meet the criterion, nor any of the categories above.

The record documentation function was scored differently. The reviewers evaluated the quality of record documentation on a four point scale:

0 = no documentation
1 = illegible documentation
2 = minimal documentation and
3 = adequate documentation.

Data were then averaged across patients to create a summary score which described a physician's average level of documentation. Scores close to zero indicated poor documentation, while scores close to three indicated adequate documentation. The Self-Assessment review exercises are based on the scoring procedures outlined above.

DEMPAQ Self-Assessment Review

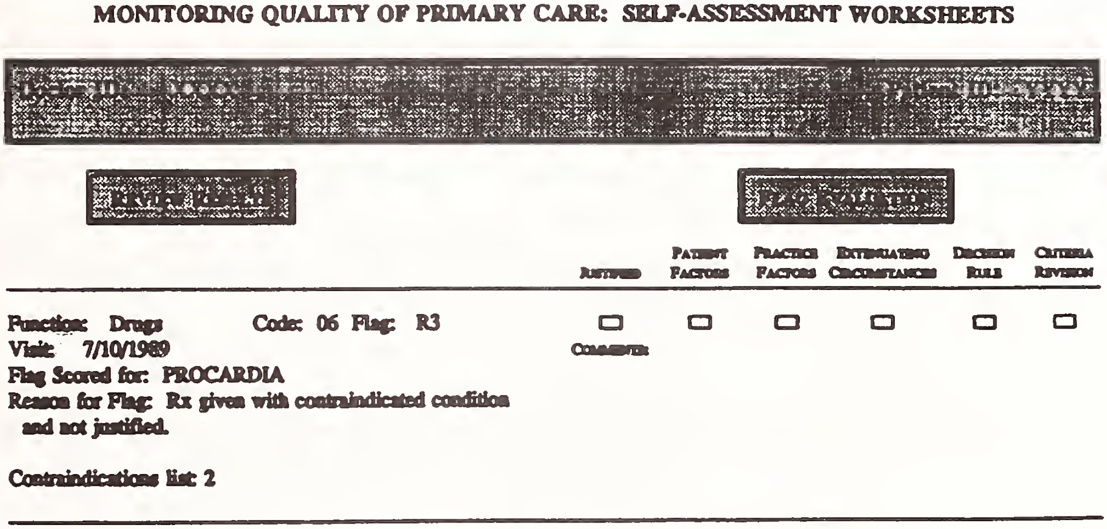
The DEMPAQ Quality Review System (DQRS) is used to collect information on 6 diagnoses, 38 classes of drugs, 4 preventive care items, 2 procedures, and 13 diagnostic tests commonly occurring in the care of Medicare patients in the ambulatory setting. In this section of the workbook you will learn to apply the criteria for these items to your own medical records. If you did not submit medical records for scoring during the implementation phase and are attending the CME workshop, you will be provided with teaching charts to which you will apply the criteria.

Self-Assessment Worksheets are provided for your review of "flags" that were generated from the application of DQRS criteria to these ambulatory records. The flag means that the criteria for one of the indicators associated with the item was not met.

The following sections describe: the Self-Assessment worksheet; the Self-Assessment Review Process; and how to conduct the Self-Assessment review. The information found in these sections will assist you in conducting a review of the quality of your ambulatory care.

Explanation of the DEMPAQ Self-Assessment Worksheet

Each worksheet consists of identifying information across the top, review results data in the left column, and flag evaluation choices in the right column.



MONITORING QUALITY OF PRIMARY CARE: SELF-ASSESSMENT WORKSHEETS

[illegible]

REVIEW RESULTS **FLAG EVALUATION**

	Justified	Patient Factors	Practice Factors	Extenuating Circumstances	Decision Rule	Criteria Revision
Function: Drugs **Code:** 06 **Flag:** R3 **Visit:** 7/10/1989 **Flag Scored for:** PROCARDIA **Reason for Flag:** Rx given with contraindicated condition and not justified. **Contraindications list:** 2	☐ Comments	☐	☐	☐	☐	☐

At the top of each worksheet you will see your name and a patient's name. Along the left margin, under the heading "Review Results", are several elements which identify the flag that was generated by the review of the patient record as well as other information related to the criteria. These elements are fully explained below. Flags are separated by a line and each should be considered independently. The right half of the page, under the heading "Flag Evaluation" is the response section of the worksheet. You will put a check mark in the box that most closely agrees with your evaluation of the flag. The heading for the boxes appears only once at the top of the page above the first set of boxes. An explanation of the meaning of each response is outlined later in the workbook.

Review Result Elements

The following section of the workbook provides definitions of the elements found in the Review Results column of the Self-Assessment worksheet.

Function:	The function which you are to review is identified here. The DQRS functions are listed in the Criteria section on page 23.
Code:	Each function/clinical item combination has been assigned a code. The code which you are to review is noted on the worksheet. A table showing the functions and indicators for DQRS is found on page 23 in the Criteria section. A list of all DQRS codes are shown on page 24 in the Criteria section.
Flag number:	Each function/indicator combination has its own flag number. The number of the flag which you are to review is noted on the worksheet. A list of all DQRS flag numbers are shown on page 25 in the Criteria section.
Visit:	This is the date of the visit as noted in the medical record from which the information for the review was gathered. When evaluating the flag you will locate this date in the medical record to begin your review.
Reason:	Short text describing the reason for the flag. This information is also outlined on page 25 in the Criteria section.
Reference:	For some flags, additional information appears which will help you understand the reason for a flag. Flags for which additional information will appear are listed beginning on page 16.

Flag Evaluation Elements

The following section of the workbook provides definitions of the elements found in the Flag Evaluation column of the Self-Assessment worksheet.

This column contains the possible evaluations of the flag identified in the Review Results column. After evaluating the patient record with the assistance of the information found in the Criteria and Decision Rules sections of this workbook, you are to select one of these responses which most closely fits your assessment of the flag and explain your response with **comments.** The possible responses are the same for all flags and include the following:

1. The criterion flag was **justified;** the criterion is appropriate.

2. The criterion could not be met in this circumstance because of **patient factors.** Describe the patient factors under comments.

3. The criterion could not be met in this circumstance because of **practice factors.** Describe the practice factors under comments.

4. The criterion should not be met in this case due to **extenuating circumstances.** Describe the extenuating circumstances under comments.

5. The flag is not justified because the abstracting **decision rule is incorrect.** Suggest a revised decision rule under comments.

6. The flag is not justified because the **criterion needs to be revised.** Propose a revised criterion for this item under comments.

Explanation of the Self-Assessment Review Process

The review process involves three steps:

- Asking a question about the quality of medical care (review questions)
- Identifying the set of acceptable answers to the question (criteria)
- Defining rules to help determine whether a particular case meets the criteria (decision rules).

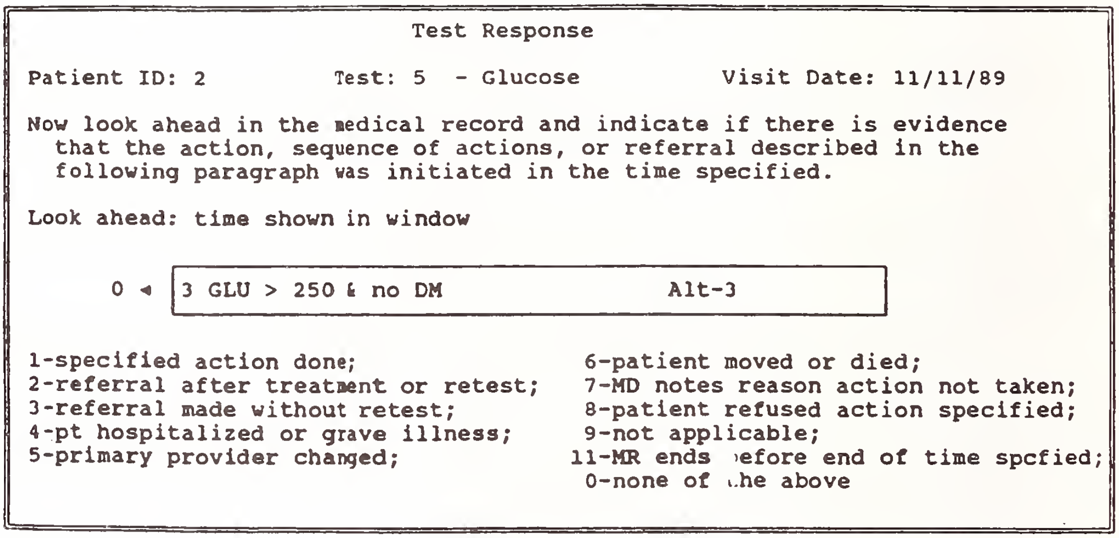
The DEMPAQ workbook contains the review questions, criteria, and decision rules for conducting the Self-Assessment review.

DQRS Review Questions

The review questions appear in two places in the Criteria section of this workbook: on the computer screen displays behind the tab dividers of each sub-section and at the top of each box on the criteria pages that follow. The tabs subdivide the Criteria section into Help Sheets, Drugs, Diagnoses, Tests, Procedures, Prevention, and Follow-up.

The first set of pages in each sub-section displays the format of the DQRS computer screen. These screens were used by the initial reviewer to score the indicator and contain information that may be useful to you in conducting your self-review. The general format for the computer screen is illustrated below in the Test Response screen shown in Figure 3 .

All data entry computer screens consist of the following:



```
                              Test Response

Patient ID: 2          Test: 5  - Glucose          Visit Date: 11/11/89

Now look ahead in the medical record and indicate if there is evidence
  that the action, sequence of actions, or referral described in the
  following paragraph was initiated in the time specified.

Look ahead: time shown in window

      0 ◄ | 3 GLU > 250 & no DM                  Alt-3 |

1-specified action done;                   6-patient moved or died;
2-referral after treatment or retest;      7-MD notes reason action not taken;
3-referral made without retest;            8-patient refused action specified;
4-pt hospitalized or grave illness;        9-not applicable;
5-primary provider changed;               11-MR ends before end of time spcfied;
                                           0-none of the above
```

Figure 3

Identifying information

The function appears at the top of the screen followed by the patient ID, item being reviewed, and visit date. This information also appears under the Review Results column of the Self-Assessment worksheet.

Review Question

A statement describing the information desired, and what time frame to search in the medical record (MR). For example: "anywhere in the MR," "time frame shown in the window," or "look ahead 24 hours". If the time frame is specified in the criterion text in the window, this statement directs the reviewer's attention to the window.

Criteria

A window into which the computer program inserts the appropriate clinical criteria for that item. These are the actions which the reviewer seeks in the medical record to evaluate the process of care. In this workbook, the clinical criteria which would appear in this window are found in the pages following the computer screen displays for each function.

Scoring Options

A list of numeric codes which constitute the complete set of acceptable responses for that review question. The initial reviewer has selected one of the responses on this list. Cases are flagged only if the score is "0" (no, not done, none of the above).

Clinical Criteria for Indicators

The criteria which appeared in the window of the data entry screen follow the computer screen displays. These criteria are unique for each item/indicator combination. For example, the appropriate tests and exams for monitoring an old diagnosis of diabetes differ from those for monitoring an old diagnosis of hypertension. You will see exactly the same criteria which were used by the initial reviewer when the case was coded.

Decision Rules

Behind the tab marked Decision Rules you will find help sheets of the rules that the initial reviewer used in the application of the DQRS to the medical record. These sheets summarize frequently referenced decision rules from the instruction manual. The sheets are organized by the following topics: Date Rules, What to Review, How to Review, and Diagnosis Synonyms for DQRS

The actual review question which appeared on the computer screen, along with the list of possible responses, specific clinical criteria and decision rules, can be used to reconstruct the rationale for the original review which resulted in a flag. This should assist you in assessing the validity of the flag. As noted earlier in the description of the Flag Evaluation column of the Self-Assessment worksheet, all of these areas are open for critique and comment. All comments are to be written in the space provided.

Conducting the Review

Find the medical record for the patient whose name appears at the top of the Self-Assessment worksheet. Begin by reading the information for the first flag in the column labeled Review Results. Turn to the Criteria section and locate the tab for the function identified on the Self-Assessment worksheet. The following uses an example from the diagnosis section.

Step-by-Step Suggestions

REVIEW RESULTS

FLAG EVALUATION

	Justified	Patient Factors	Practice Factors	Extenuating Circumstances	Criteria Revision	Decision Rule
Function: Diagnosis Code: 01 Flag: D1 Visit: 7/10/1989 Flag Scored for: Hypertension Reason for Flag: Actions not taken to monitor old diagnosis appropriately % Monitoring Actions Done: 50 1. ________ 5. ________ 2. ________ 6. ________ 3. Not Done 7. Not Done 4. Not Done 8. Not Done	☐ Comments:	☐	☐	☐	☐	☐

1. Look at the Review Results column on the Self-Assessment worksheet to see which function/item was flagged and why.

2. Turn to the Criteria section and locate the sub-section for the function identified on the Self-Assessment worksheet. For this example turn to the diagnosis sub-section.

3. Look at the DQRS computer screen displays to see how the review question appeared to the initial reviewer.

4. Continue in the sub-section, past the computer screen displays to find the pages containing the clinical criteria. Find the code at the upper right corner which corresponds to the code shown on the Self-Assessment worksheet. The pages of each function sub-section are arranged in numerical order by code (01, 02, 03, etc.). A complete list of DQRS codes is found in the Help Sheets sub-section, on page 24.

   The review question from the computer screen is reproduced at the top center of the box. In some cases this question has been abbreviated and you may want to refer back to the computer screen displays at the beginning of the sub-section for more detailed information. The code in this example is identified as 01. Locate the 01 code in the diagnosis sub-section. Code 01 represents the diagnosis **hypertension.**

5. Locate the flag, identified as D1. The letter/number combination for the flags appear in the upper right corner of the boxes. A complete list of the reason for the DQRS flags can be found in the Help Sheets sub-section, on page 25. As noted on page 25, the D in this example represents the diagnosis function while the 1 represents the indicator old **diagnosis monitoring.**

6. Look at the clinical criteria in the box which corresponds to the flag to determine what data you are seeking in the medical record.

7. Note the timeframe for the action, either in the computer screen text or in the criteria text. Refer to the Decision Rules section for Date Rules.

8. Locate the visit note in the medical record which corresponds to the date shown in the Review Results column.

9. Try to answer the DQRS review question by applying the criteria to the visit note(s) and any other portion of the medical record in the time frame specified.

10. Evaluate the flag and record your response by marking one of the boxes in the Flag Evaluation column of the worksheet. Turn to the Example section of this workbook to find detailed illustrations of flag evaluation responses.

11. Explain your choice or reasons for your response in the space provided for comments. Add any other comments relevant to the review process.

Special Situations

Monitoring Actions

Two indicators are scored differently than all the others. These are old diagnosis monitoring and drug monitoring. These indicators require that one or more examinations and/or tests be completed. The monitoring actions vary depending on the diagnosis or drug being reviewed. These indicators are not scored met or flag. Instead, the system reports the percent of applicable monitoring actions which were done. **A case is flagged if less than 60 percent of monitoring actions were done.**

To evaluate flags for monitoring actions, you need to know which actions the initial reviewer did not find in the medical record and in the case of drug monitoring, if the drug status is **old** or **new.** It is important to take note of the drug status since monitoring actions and/or time frames for monitoring may differ for the same drug depending on its status. The percent of actions done is one of the elements found in the Review Results column, and in the case of drug monitoring this information is preceded by the identification of the drug as old or new.

All of the monitoring actions are found in the Criteria section of this workbook. For drug monitoring, actions for old or new status are noted on separate pages.

Actions not found by the initial reviewer will show "not done" next to the action number listed under monitoring actions. Any monitoring action numbers that do not have text beside them were found in the record, scored as an acceptable alternative, or the action was not applicable. You will note that the numbers of the monitoring actions found in the Review Results column correspond with the numbers of the monitoring actions listed in the Criteria section of this workbook for the specific monitoring activity.

Example: Evaluation of Monitoring

For this example, we will use the review of monitoring actions for a drug flag on a Thiazide-type diuretic. Elements found in the Review Results column are:

Function: Drugs **Code:** 10 **Flag:** R5
Visit: 10/23/1990
Flag Scored for: HYDROCHLOROTHIAZIDE
Reason for Flag: Actions not taken to monitor
Rx appropriately.

☐ ☐ ☐ ☐ ☐ ☐
COMMENTS:

DRUG STATUS: Old

% Monitoring Actions Done: 00
1. Not Done 5. ________
2. Not Done 6. ________
3. Not Done 7. ________
4. ________ 8. ________

Turn to the Criteria section of the workbook, and locate the drug sub-section. The first few pages of this section list the drugs by code and name. The pages of criteria for the evaluation of each drug follows this list by code order (e.g., 01, 03, 04, etc.). Turn to Code 10, Diuretic, Thiazide-type, and find the page for old monitoring which is Flag: R5. This will show you the complete list of monitoring actions required for this drug. The number one corresponds to monitoring BUN or serum creatinine every six months, the number two corresponds to monitoring serum sodium every six months and the number three corresponds to monitoring serum potassium every six months. There are a total of seven monitoring actions possible. For this example, the Review Results column indicates that actions one, two, and three were not done, while actions four through seven were either done, scored as an acceptable alternative, or not applicable.

Flags Requiring Additional Information

The flags which require additional information for your evaluation are listed below with an explanation of the text that appears on the Self-Assessment worksheet in the Review Results column.

Tests

Flag T3: Results Range

Flag T3 is generated when there is no appropriate response to an abnormal test result. In scoring this indicator, the reviewer must first select the result range of the test so that the DQRS system can show the relevant criterion text in the window on the computer screen.

The text found in the Criteria section of this workbook for flag T3 lists all result ranges with a code number next to the range. The range number chosen by the reviewer is shown toward the bottom of the Review Results column for that flag so that you may judge whether the correct range was chosen. The text next to the result range shows the actions recommended for that result.

Drugs

Flag R3: Condition List

Flag R3 is generated when a drug is given to a patient with a contraindicated condition, but there is no justification in the medical record for the prescription. The contraindicated conditions for each drug type are divided into two lists shown in the Criteria section of this workbook. The list on which the contraindicated condition is found is identified in the Review Results column of the Self-Assessment worksheet.

List one contains conditions which are usually considered absolute contraindications. Justification for a prescription from list one requires an explicit note in the medical record about the choice of that drug. List two contains conditions for which justification for the prescription of that drug may be inferred. For example, for a patient with peptic ulcer disease, the prescription of corticosteroids may be justified by a note in the record that the ulcer disease is stable or asymptomatic.

Flag R4: Drug List

Flag R4 is generated when a drug is given to a patient who is also taking a contraindicated drug. As described above, there are two lists of contraindicated drugs shown in the Criteria section of this workbook. The Review Results column of the Self-Assessment worksheet indicates which list to refer to in order to review the flag.

Flag R5: % Actions Done

Flag R5 is generated when less than 60% of relevant drug monitoring actions were done. The element at the bottom of the Review Results column of the Self-Assessment worksheet shows the percent of actions done.

Follow-up

Flag F1: Consult/Hospitalization

Flag F1 is generated when the patient has been sent for either a consultation or is hospitalized, and there is no further note in the medical record to show that the physician was aware of the outcome. The element at the bottom of the Review Results column of the Self-Assessment worksheet shows which of the two was found unresolved by the initial reviewer.

Flag F2: Mass/Bleed/Weight Loss

Flag F2 is generated when the medical record shows that a mass or a bleed or an unexplained weight loss was noted by the physician, but there was no further note about it in the record. The Review Results column of the Self-Assessment worksheet shows which of the three was recorded by the reviewer as unresolved. If more than one of the three was in the record, the initial review was preferentially based on mass rather than the other two, or on bleed rather than weight loss.

Diagnosis

Flag D1: % Actions Done

Flag D1 is generated when less than 60% of relevant diagnosis monitoring actions have been done. The following list shows which of the actions were not done. Actions which correspond to the numbers of this element are found in the Criteria section of this workbook.

MONITORING QUALITY OF PRIMARY CARE: SELF-ASSESSMENT WORKSHEETS

Doctor ID: XXXX **Patient ID:** YYYY

REVIEW RESULTS **FLAG EVALUATION**

	Justified	Patient Factors	Practice Factors	Extenuating Circumstances	Decision Rule	Criteria Revision
Function: Drugs Code: 06 Flag: R3 Visit: 7/10/1989 Flag Scored for: PROCARDIA Reason for Flag: Rx given with contraindicated condition and not justified. Contraindications list: 2	☐ Comments:	☐	☐	☐	☐	☐
Function: Drugs Code: 06 Flag: R5 Visit: 7/10/1989 Flag Scored for: PROCARDIA Reason for Flag: Actions not taken to monitor Rx appropriately. DRUG STATUS: Old % Monitoring Actions Done: 50 1. ______ 5. ______ 2. Not Done 6. ______ 3. ______ 7. ______ 4. ______ 8. ______	☐ Comments:	☐	☐	☐	☐	☐
Function: Tests Code: 01 Flag: T3 Visit: 11/16/1990 Flag Scored for: Creatinine Reason for Flag: No appropriate followup of abnormal test results. Result range: 1	☐ Comments:	☐	☐	☐	☐	☐

Signature/Date: ______________________________

Examples of Peer Review Evaluations Choices

Justified	Patient Factors	Practice Factors	Extenuating Circumstances	Decision Rule	Criteria Revision
☑	☐	☐	☐	☐	☐

The criterion flag was **justified**; the criterion is appropriate.

Example: The action required by the criteria is appropriate for the patient in this case. You have searched the medical record in the time frame specified, and do not find the action. The review was apparently conducted accurately, and you do not disagree with the criterion.

Justified	Patient Factors	Practice Factors	Extenuating Circumstances	Decision Rule	Criteria Revision
☐	☑	☐	☐	☐	☐

The criterion could not be met in this circumstance because of **patient factors.**

Example: The action required is appropriate, but is not found in the medical record. The record states that the patient was in Florida for two months during which the action was to be performed.

Example: The action required is appropriate, but is not found in the medical record. The record states that the patient was diagnosed with terminal lung cancer, making a mammogram unnecessary.

Justified	Patient Factors	Practice Factors	Extenuating Circumstances	Decision Rule	Criteria Revision
☐	☐	☑	☐	☐	☐

The criterion could not be met in this circumstance because of **practice factors.**

Example: The action required is appropriate, but is not found in the medical record. There is evidence in the record that the practice was in the process of converting to a new computerized practice management system, and the procedures for patient recall were disrupted during this time frame.

Example: The action required is appropriate, but is not recognized in the medical record. There is a note that an "RP" was done. "RP" stands for Renal Profile, which includes the measurement of serum potassium.

Justified	Patient Factors	Practice Factors	Extenuating Circumstances	Decision Rule	Criteria Revision
☐	☐	☐	☑	☐	☐

The criterion should not be met in this case due to extenuating circumstances.

Example: The action required is appropriate, but is not found in the medical record. There is a note that the patient is undergoing psychotherapy and has initiated legal proceedings against her husband following an episode of domestic violence. In this case, the patient's psychosocial problems supersede the strict time frame of the criterion.

Justified	Patient Factors	Practice Factors	Extenuating Circumstances	Decision Rule	Criteria Revision
☐	☐	☐	☐	☑	☐

The flag is not justified because the abstracting **decision rule** is incorrect.

Example: The action specified for monitoring diabetes is examining the fundi. This is appropriate, and the medical record shows that "HEENT" were examined. The case is flagged because the abstracting rule is that for diabetes monitoring, a fundus exam should be stated explicitly. You believe that HEENT is sufficient evidence of a fundus exam, and do not think the case should be flagged.

NOTE: Cases which fall into this category will not be immediately evident to you. When there is any doubt about the interpretation of the criteria, refer to the Decision Rules section of the workbook.

Justified	Patient Factors	Practice Factors	Extenuating Circumstances	Decision Rule	Criteria Revision
☐	☐	☐	☐	☐	☑

The flag is not justified because **criterion revision** is needed.

Example: You disagree with the clinical content of the criterion as stated on in the Criteria section of this workbook. Please give your rationale and suggest a more appropriate criterion under Comments in the Flag Evaluation column.

DQRS Functions and Indicators

FUNCTIONS	INDICATORS
Diagnosis	Pre-existing diagnoses are appropriately monitored New diagnoses are justified by the evidence in the record Actions are taken to search for treatable causes or comorbidities of new diagnoses
Drugs	Drug dose and frequency appear in the record Drug is prescribed for an appropriate condition There are no condition contraindications in the record, or if present, they are justified There are no drug contraindications in the record, or if present, they are justified The patient is appropriately monitored for adverse effects of the medication
Follow-up	If the patient is hospitalized or referred, a discharge or consult note, or physician mention of the event is in the medical record If the patient has a mass, bleed, or unexplained weight loss, the finding is followed up in the time specified in the medical record, or within three months
Prevention	A blood pressure exam is done once in two years A flu shot occurs at least once in the two year period A breast exam is done once for women in two year period A mammogram is done once for women less than 75 years old in the two year review period
Procedures	A procedure is ordered/performed for appropriate indications There is appropriate follow-up of abnormal results A biopsy is done if required The pathology report is in the medical record if a biopsy is taken The area to be visualized the "scope" is seen
Tests	The test is ordered/performed for appropriate conditions The patient is hospitalized or referred if required There is appropriate follow-up of abnormal results

DQRS Code List

CODE	FUNCTION/ITEM
	Diagnosis
01	Hypertension
02	Ischemic Heart Disease
03	Osteoarthritis
04	COPD
05	Diabetes Mellitus
06	CHF
07	Rheumatoid Arthritis
	Test
01	Blood Pressure
02	Hemoglobin/Hematocrit
03	Cholesterol
04	Serum Potassium
05	Glucose
06	Blood Gases
07	Creatinine
08	ESR
09	Urine Dipstick
10	ECG
11	Joint X-ray
12	Chest X-ray
13	Mammogram
	Procedure
01	Sigmoidoscopy
02	Colonoscopy

CODE	FUNCTION/ITEM
	Drugs
01	ACE inhibitor
03	Alpha blocker
04	Beta blocker
05	Centrally acting antiadrenergic
06	Ca ++ channel block
08	Loop diuretic
10	Thiazide diur
11	Ace + thiazide
18	Thiaz. + K + sparing
21	Nitrate
31	Insulin
32	Oral hypoglycemics
51	Beta-adrenergic agonist, inhaled
52	Cholinergic inhib.
53	Xanthine-deriv, oral
55	Beta-adr. agon, oral
61	Cephalosporin
62	Erythromycin
64	Tetracycline
65	Aminopenicillin
66	Penicillinase resistant pen.
72	Sulfonamide Trimethroprim

DQRS Flag List

FLAG	REASON
D1	Actions not taken to monitor old diagnosis appropriately
D2	New diagnosis not justified by evidence in medical record
D3	No search for treatable causes/comorbidities of new Dx
T1	Ordering test not justified by evidence in medical record
T2	No hospitalization or referral when required by test result
T3	No appropriate follow-up of abnormal test results
R1	Dose and frequency not in medical record
R2	Prescription of Rx not justified by evidence in medical record
R3	Rx given with contraindicated condition, and not justified
R4	Rx given with contraindicated drug, and not justified
R5	Actions not taken to monitor Rx appropriately
S1	No blood pressure documented in medical record
S2	No flu shot documented in medical record
S3	No mammogram documented in medical record
S4	No breast exam documented in medical record
F1	No note in medical record after hospitalization or consult
F2	No follow-up of significant in medical record

Key:

LETTER	FUNCTION
D	Diagnosis
T	Tests
R	Drugs
S	Prevention
F	Follow-up

DRUGS

GENERIC AND TRADE NAMES

Code	Drug Type	Generic	Trade
01	Angiotensin-converting Enzyme ACE Inhibitor	Captopril Enalapril Lisinopril	Capoten Vasotec Prinivil, Zenstril
03	Antiadrenergic - Peripheral Alpha-blocker	Prazosin Terazosin	Minipress Hytrin
04	Antiadrenergic - Beta-blocker	Acebutolol Atenolol Carteolol Labetalol Metoprolol Nadolol Penbutolol Pindolol Propranolol Timolol Kerlone	Sectral Tenormin Cartrol Normodyne, Trandate Lopressor Corgard Levatol Visken Inderal Blocadren Betaxolol
05	Antiadrenergic - Centrally Acting	Clonidine Guanabenz Guanfacine Methyldopa Reserpine	Catapres (includes patches) Wytensin Tenex Aldomet Serpasil
06	Calcium Channel-blocker	Diltiazem Nicardipine Nifedipine Verapamil	Cardizem Cardene Adalat, Procardia Calan, Isoptin, Verelan
07	Direct-acting Vasodilator	Hydralazine Minoxidil	Apresoline Loniten
08	Diuretic - Loop	Bumetanide Ethacrynic Acid Furosemide	Bumex Edecrin Lasix
09	Diuretic, Potassium-sparing	Amiloride Spironolactone Triamterene	Midamor Aldactone Dyrenium

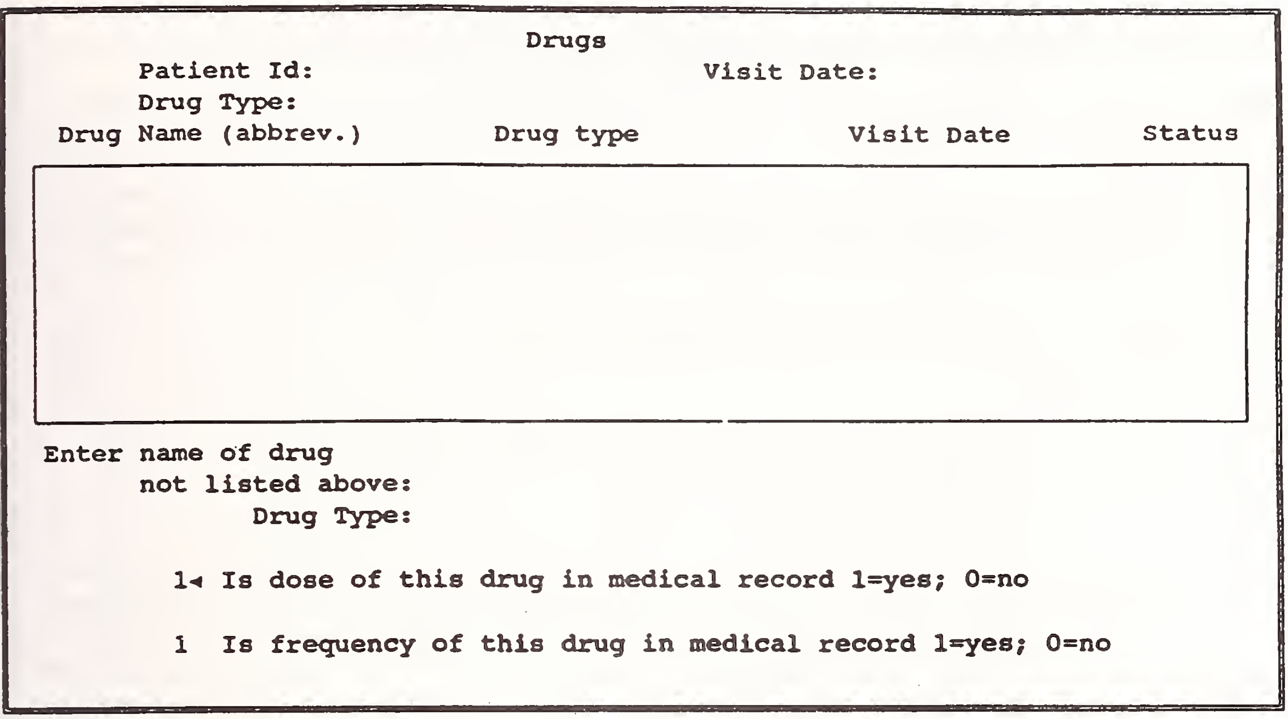
Code	Drug Type	Generic	Trade
10	Diuretic, Thiazide-type	Bendroflumethiazide Benzthiazide Chlorothiazide Chlorthalidone Cyclothiazide Hydrochlorothiazide Hydroflumethiazide Indapamide Methyclothiazide Methyclothiazide+Enduronyl Metolazone Polythiazide Quinethazone Trichlormethiazide	Naturetin Exna, Hydrex Diuril Hygroton, Thalitone Anhydron, Fluidil Esidrix, Hydrodiuril, Oretic Diucardin, Saluron Lozol Aquatensen, Enduron Enduronyl Diulo, Zaroxolyn Renese Hydromox Metahydrin, Naqua
11	ACE Inhibitor + Thiazide Diuretic	Hydrochlorothiazide+Captopril Hydrochlorothiazide+Analapril Hydrochlorothiazide+Lisinopril	Capozide Vaseretic Prinizide, Zestoretic
12	Antiadrenergic Alpha-blocker + Diuretic, Thiazide-type	Polythiazide+Prazosin	Minizide
13	Antiadrenergic Beta-blocker + Diuretic, Thiazide-type	Hydrochlorothiazide+Labetalol Hydrochlorothiazide+Metoprolol Hydrochlorothiazide+Propranolol Hydrochlorothiazide+Timolol Chlorthalidone+Atenolol Bendroflumethiazide+Nadolol	Normozide, Trandate HCT Lopressor HCT Inderide Timolide Tenoretic Corzide
14	Antiadrenergic, Centrally Acting + Diuretic, Thiazide-type	Clonidine+Chlorthalidone Methyldopa+Chlorothiazide Methyldopa+Hydrochlorothiazide Reserpine+Chlorothiazide Reserpine+Chlorthalidone Reserpine+Hydrochlorothiazide Reserpine+Hydroflumenthiazide Reserpine+Methyclothiazide Reserpine+Polythiazide Reserpine+Quinethazone Reserpine+Trichlormethiazide	Combipres Aldoclor Aldoril Diupres Regroton Hydropres, Hydrotensin, Serpasil-Esidrix Salazide, Salutensin Diutensen-R Renese-R Hydromox-R Metatensin
15	Centrally Acting Antiadrenergic + Thiazide-type Diuretic + Direct-acting Vasodilator	Reserpine+Hydralazine +Hydrochlorothiazide	Ser-Ap-Es
16	Centrally Acting Andiadrenergic + Direct-acting Vasodilator	Hydralazine+Reserpine	Serpasil-Apresoline
17	Direct-acting Vasodilator + Diuretic, Thiazide-type	Hydralazine+Hydrochlorothiazide	Apresadize, Apresoline-Esidrix

Code	Drug Type	Generic	Trade
18	Diuretic, Thiazide-type + Potassium-sparing Type	Hydrochlorothiazide + Amiloride	Moduretic
		Hydrochlorothiazide + Spironolactone	Aldactazide
		Hydrochlorothiazide + Triamterene	Dyazide, Maxizide
21	Nitrate	Erythrityl tetranitrate	Cardilate
		Isosorbide dinitrate	Dilatrate SR, Iso-Bid, Isonate, Isorbid, Isordil, Isotrate, Sorbitrate
		Nitroglycerin (buccal, lingual, oral, sublingual)	Nitro-Bid, Nitrocap, Nitrogard, Nitroglyn, Nitrol, Nitrolin, Nitrolingual, Nitronet, Nitrospan, Nitrostat, Tridil
		Nitroglycerin (transdermal)	Deponit, Nitrocine, Nitrodisc, Nitro-Dur, NTS, Transderm-Nitro
		Pentaerythritol tetranitrate	Duotrate, Naptrate, Pentritil, Pentylan, Peritrate
31	Insulin	Regular	Iletin
		Regular + Isophane	Mixtard
		Regular, human	Humulin
		Regular, human + Isophane	Humulin 70/30, Mixtard 70/30, Novolin 70/30
		Isophane (NPH)	NPH Iletin
		Isophane, human	Humulin N
		Zinc	Lente Iletin
		Zinc, human	Humulin L, Novolin L
		Extended Zinc	Ultralente Iletin
		Extended Zinc, human	Humulin U Ultralente
		Prompt Zinc	Semilente Iletin
		Protamine Zinc	Protamine Zinc & Iletin
32	Oral Hypoglycemic Agent	Acetohexamide	Dymelor
		Chlorpropamide	Diabinese, Glucamide
		Glipizide	Glucotrol
		Glyburide	Diabeta, Micronase
		Tolazamide	Tolamide, Tolinase
		Tolbutamide	Oramide, Orinase
41	Corticosteroid	Betamethasone	Celestone
		Cortisone	Cortone
		Dexamethasone	Decadron, Hexadrol, Dexone
		Hydrocortisone	Cortef, Hydrocortone
		Methylprednisolone	Medrol, Meprolone
		Paramethasone	Haldrone
		Prednisolone	Prelone, Delta-Cortef, Hydeltrasol
		Prednisone	Deltasone, Meticorten, Orasone
		Triamcinolone	Aristocort, Kenacort

Code	Drug Type	Generic	Trade
42	Nonsteroidal Anti-inflammatory Analgesic (Nonsalicylate) (NSAID)	Diclofenac	Voltaren
		Diflunisal	Dolobid
		Fenoprofen	Nalfon
		Flurbiprof	Ansaid
		Ibuprofen	Advil, Haltran, Mediprin, Motrin, Nuprin, Trendar
		Indomethacin	Indocin
		Ketoprofen	Orudis
		Meclofenamate	Meclofen, Meclomen
		Mefenamic Acid	Ponstel
		Naproxen	Naprosyn, Anaprox
		Phenylbutazone	Butazolidin
		Piroxicam	Feldene
		Sulindac	Clinoril
		Tolmetin	Tolectin
43	Salicylate	Aspirin	Aspergum, Bayer, Ecotrin, Empirin, Measurin
		Aspirin, buffered	Arthritis Pain Formula, Ascriptin, Bufferin
		Choline Salicylate	Arthropan
		Choline and Magnesium Salicylates	Trilisate
		Magnesium Salicylate	Doan's
		Salicylamide	Uromide
		Salsalate	Disalcid
51	Beta-adrenergic Agonist (Adrenergic Bronchodilator) - Inhaled	Albuterol	Proventil, Ventolin
		Bitolterol	Tornalate
		Epinephrine	Bronkaid Mist, Primatene Mist
		Ethylnorepinephrine	Bronkephrine
		Isoetharine	Bronkosol, Bronkometer
		Isoproterenol	Aerolone, Isuprel
		Isoproterenol+Phenylephrine	Duo-Medihaler
		Metaproterenol	Alupent, Metaprel
		Pirbuterol	Maxair
		Racepinephrine	Asthma Nephrin
		Terbutaline	Brethaire, Brethine, Bricanyl
52	Cholinergic Inhibitor (Inhalation-Local)	Ipratropium	Atrovent

Code	Drug Type	Generic	Trade
53	Xanthine-derivative (Oral)	Aminophylline	Somophyllin
		Dyphylline	Dilor, Dyflex, Lufyllin
		Oxtriphylline	Choledyl
		Theophylline	Aerolate, Bronkodyl, Duraphyl, Elixophyllin, Quibro, Slo-Bid, Slo-Phyllin, Somophyllin-T, Sustaire, Theo-24, Theobid, Theochron, Theo-Dur, Theolair, Uniphyl
		Theophylline + Guaifenesin	Asbron G, Eliophyllin-GG, Quibron, Slo-Phyllin GG, Theolair-Plus, Theolate
54	Beta-adrenergic Agonist + Xanthine-derivative (Oral)	Theophylline + Ephedrine, Guaifenesin, Barbiturates	Bronkolixir, Bronkotabs, Guaifed, Mundrane GG, Quibron Plus
		Theophylline + Ephedrine, Hydroxyzine	Marax, Theozine
		Theophylline + Ephedrine, Phenobarbital	Primatene "P", Tedral
55	Beta-adrenergic Agonist (Oral)	Albuterol	Proventil, Ventolin
		Ephedrine	Vantronol
		Isoproterenol (sublingual)	Aerolone, Isuprel
		Metaproterenol	Alupent, Metaprel
		Terbutaline	Brethaire, Brethine, Bricanyl
61	Cephalosporin	First Generation:	
		Cefadroxil	Duricef, Ultracef
		Cephalexin	Keflex
		Cephadrine	Anspor, Velosef
		Second Generation:	
		Cefaclor	Ceclor
		Cefuroxime	Ceftin
		Third Generation:	
		Cefixime	Suprax
62	Erythromycin	Erythromycin	Eryc, E-Mycin, Ilotycin
		Erythromycin Estolate	Ilosone
		Erythromycin Ethylsuccinate	EryPed, Pediamycin, Wyamycin E, EES
		Erythromycin Stearate	Erythrocin, Erypar, Wyamycin S
63	Penicillin	Penicillin V Tablets	Veetids, Betapen VK, Ledercillin VK, Pee Vee K
		Penicillin G Tablets	Pentids

Code	Drug Type	Generic	Trade
64	Tetracycline	Demeclocycline	Declomycin
		Doxycycline	Doryx, Vibramycin
		Methacycline	Rondomycin
		Minocycline	Minocin
		Oxytetracycline	Terramycin
		Tetracycline	Achromycin, Panmycin, Sumycin, Tetracyn
65	Aminopenicillins	Amoxicillin	Amoxil, Polymox, Trimox, Wymox
		Amoxicillin + Clavulanate	Augmentin
		Ampicillin	Amcill, Omnipen, Polycillin, Principen, Totacillin
		Ampicillin + Sulbactam	Unasyn
		Bacampicillin	Spectrobid
		Cyclacillin	Cyclapen-W
66	Penicillinase-resistant Penicillins	Cloxacillin	Cloxapen, Tegopen
		Dicloxacillin	Dynapen, Pathocil, Dycill
		Oxacillin	Bactocill, Prostaphlin
71	Sulfonamides	Sulfamethoxazole	Gantanol
		Sulfamethoxazole + Analgesic	Azo-Gantanol, Azo-Gantrisin
		Sulfisoxazole	Gantrisin
72	Trimethoprim-Sulfamethoxazole	Sulfamethoxazole + Trimethoprim	Bactrim, Cotrim, Septra



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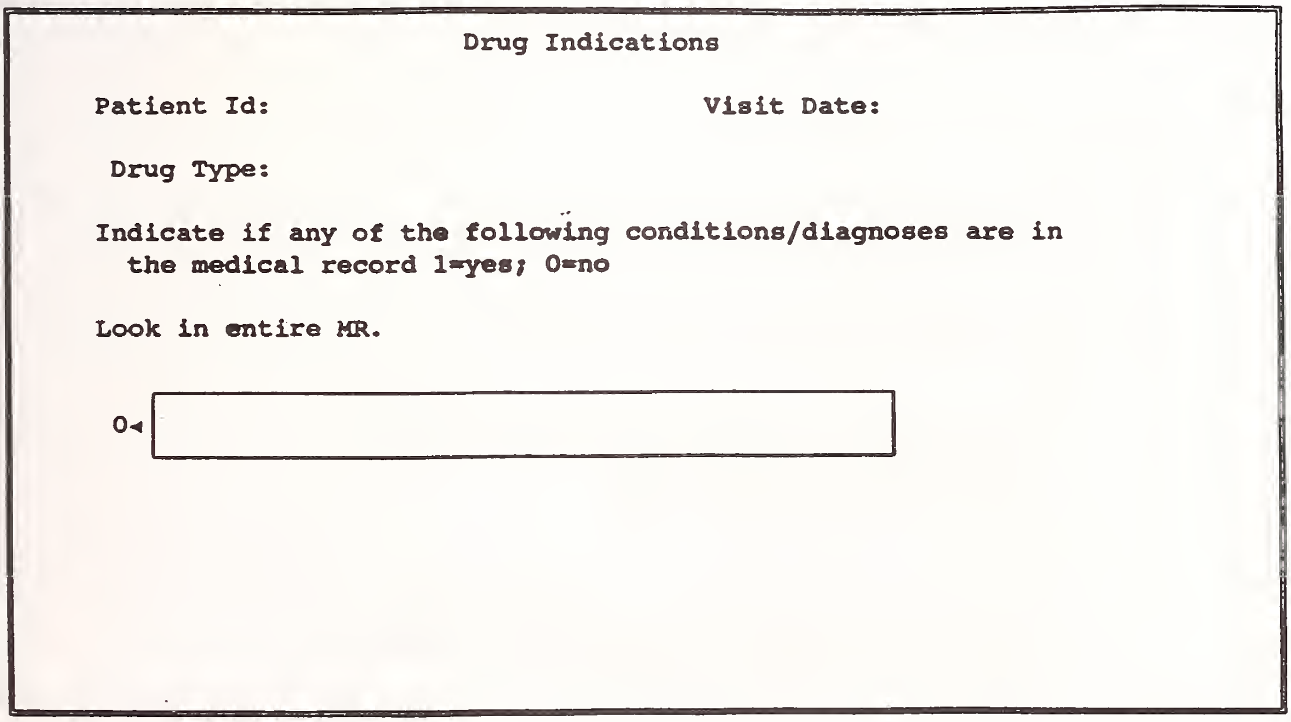
                              Drugs
      Patient Id:                             Visit Date:
      Drug Type:
  Drug Name (abbrev.)        Drug type                  Visit Date        Status

 Enter name of drug
      not listed above:
             Drug Type:

        1◂ Is dose of this drug in medical record 1=yes; 0=no

        1  Is frequency of this drug in medical record 1=yes; 0=no
```



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                         Drug Indications

    Patient Id:                                 Visit Date:

     Drug Type:

    Indicate if any of the following conditions/diagnoses are in
      the medical record 1=yes; 0=no

    Look in entire MR.

     0◂
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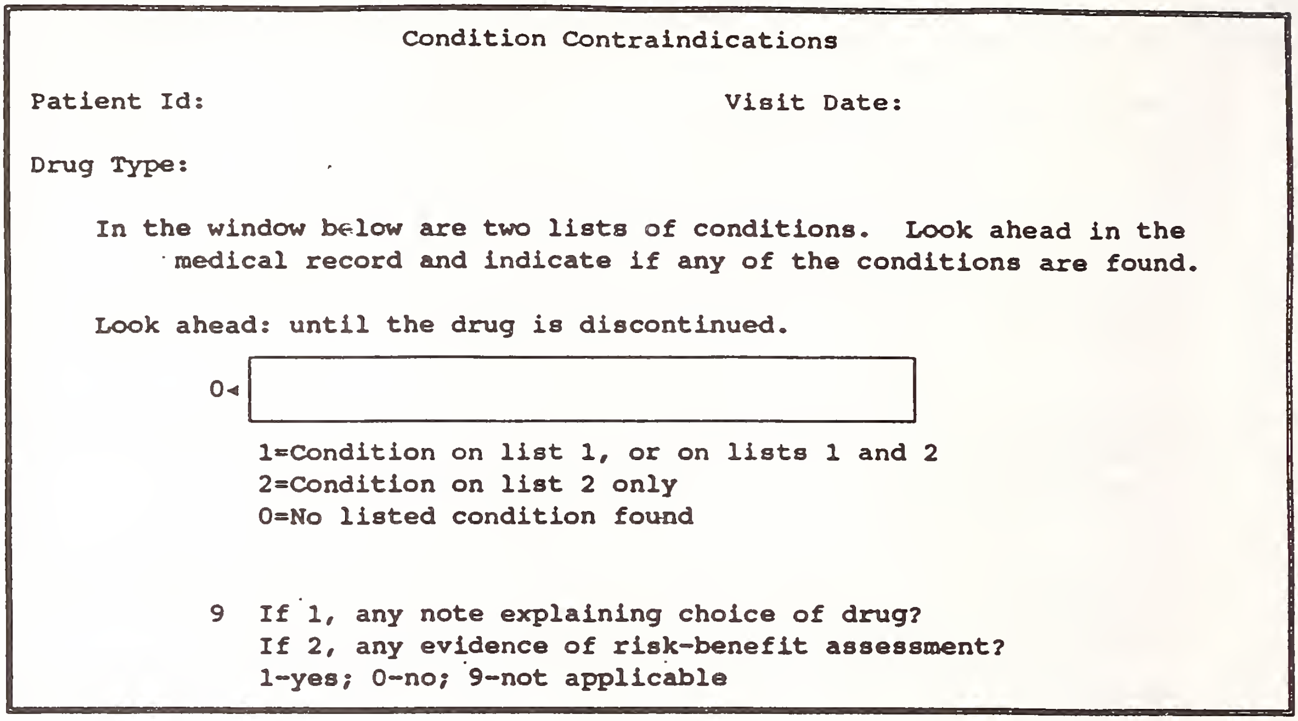


Condition Contraindications

Patient Id: Visit Date:

Drug Type:

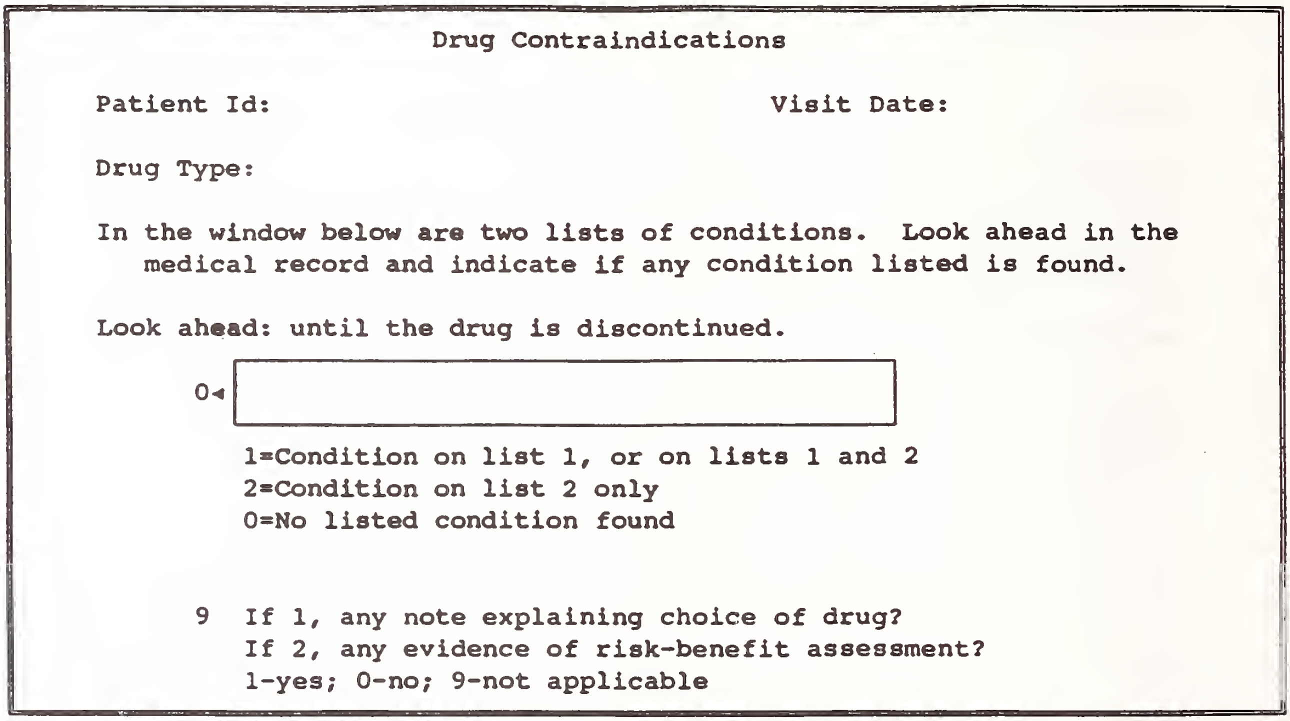
In the window below are two lists of conditions. Look ahead in the medical record and indicate if any of the conditions are found.

Look ahead: until the drug is discontinued.

0◂ ☐

1=Condition on list 1, or on lists 1 and 2
2=Condition on list 2 only
0=No listed condition found

9 If 1, any note explaining choice of drug?
If 2, any evidence of risk-benefit assessment?
1-yes; 0-no; 9-not applicable



Drug Contraindications

Patient Id: Visit Date:

Drug Type:

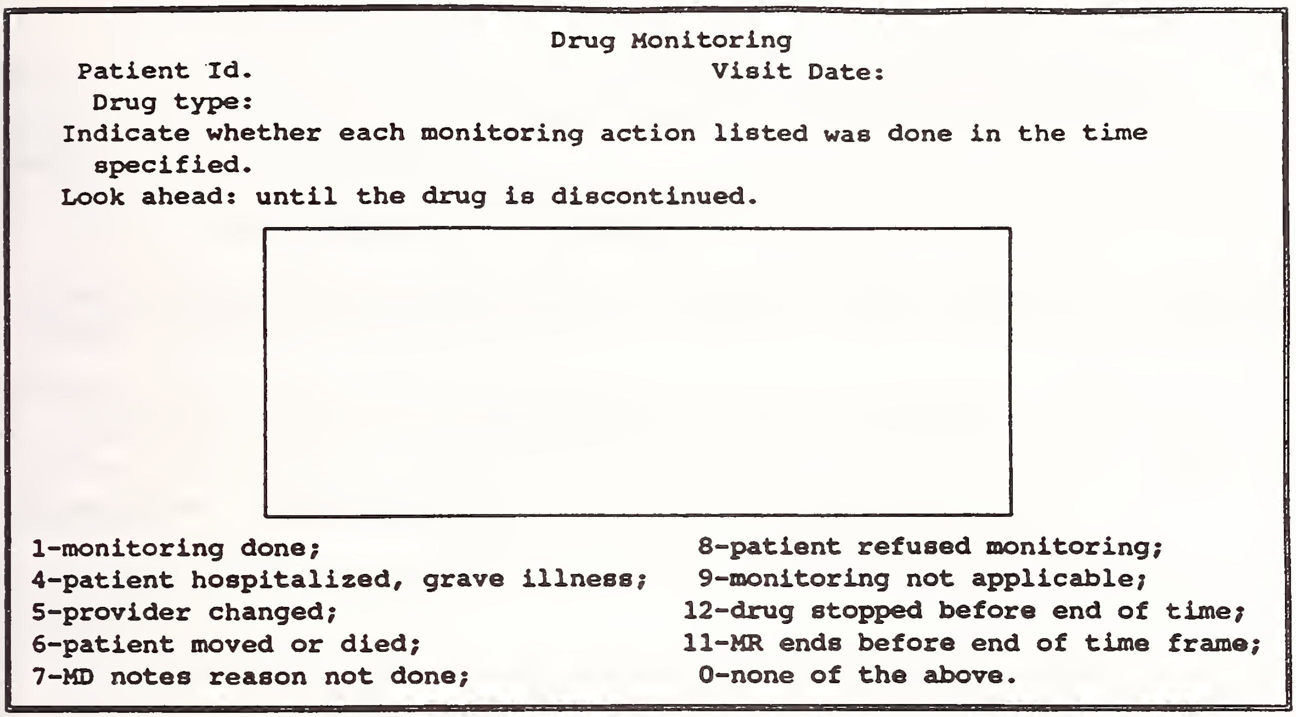
In the window below are two lists of conditions. Look ahead in the medical record and indicate if any condition listed is found.

Look ahead: until the drug is discontinued.

0◂ ☐

1=Condition on list 1, or on lists 1 and 2
2=Condition on list 2 only
0=No listed condition found

9 If 1, any note explaining choice of drug?
If 2, any evidence of risk-benefit assessment?
1-yes; 0-no; 9-not applicable



Drug Monitoring

Patient Id.
Visit Date:
Drug type:

Indicate whether each monitoring action listed was done in the time specified.

Look ahead: until the drug is discontinued.

1-monitoring done;
4-patient hospitalized, grave illness;
5-provider changed;
6-patient moved or died;
7-MD notes reason not done;
8-patient refused monitoring;
9-monitoring not applicable;
12-drug stopped before end of time;
11-MR ends before end of time frame;
0-none of the above.

DRUGS FUNCTION:

ANGIOTENSIN-CONVERTING ENZYME (ACE) INHIBITOR CODE: 01

INDICATIONS: Flag: R2

Review Question: Indicate if any of the following conditions/diagnoses are in the medical record.

1. Hypertension: ACE inhibitors are indicated as first-line pharmacologic treatment of mild to severe hypertension. When diuretics are not given concurrently, ACE inhibitors are somewhat more efficacious in white than in black patients (DE, p. 487).

2. Congestive heart failure: ACE inhibitors are especially useful agents in the treatment of congestive heart failure; both captopril and enalapril improve survival in patients with end-stage congestive heart failure (DE, p. 487).

DIAGNOSIS CONTRAINDICATIONS: Flag: R3

Review Question: Look ahead in the medical record and indicate if any of the conditions are found.

Contraindications List 1: Absolute Contraindications: None

Contraindications List 2: Consider risk-benefit when:

1. Angioedema: This condition is rare but serious; it may be related to previous ACE inhibitor use (DE, p. 489; Harrison's, p. 375).

2. Hyperkalemia: ACE inhibitors may cause hyperkalemia and should not be given to patients who have this condition (DE, p. 488).

3. Reactive airway disease (asthma, COPD): Rarely ACE inhibitors may aggravate respiratory symptoms in asthmatics (DE, p. 489).

4. Cough: Chronic nonproductive cough is a common adverse effect of ACE inhibitors, particularly in women (DE, p. 489).

DRUG CONTRAINDICATIONS: **Flag: R4**

Review Question: Look ahead in the medical record and indicate if any of the drugs are found.

Drug List 1: Absolute Contraindications:

1. Potassium-sparing diuretics: ACE inhibitors may cause hyperkalemia, especially in patients receiving concomitant therapy with potassium-sparing diuretics (DE, p. 488-9).

Drug List 2: Consider risk-benefit when: None

Angiotensin-converting Enzyme (ACE) Inhibitor (cont'd) **CODE: 01**

OLD MONITORING **Flag: R5**

Review Question: Indicate whether each monitoring action was done in the time specified.

Monitoring Actions:

1. All Patients:

Monitor: Blood Pressure
Time Frame: Every 6 months

Rationale: ACE inhibitors reduce total peripheral vascular resistance, thereby lowering blood pressure. The initial dose may cause a precipitous fall in blood pressure, and, occasionally, symptomatic hypotension may develop later in the course of therapy (DE, p. 488). To monitor for this problem, blood pressure should be taken regularly, with standing blood pressure taken once per year.

2. All Patients:

Monitor: Standing blood pressure
Time Frame: Annually

Rationale: ACE inhibitors reduce total peripheral vascular resistance, thereby lowering blood pressure. The initial dose may cause a precipitous fall in blood pressure, and, occasionally, symptomatic hypotension may develop later in the course of therapy (DE, p. 488). To monitor for this problem, blood pressure should be taken regularly, with standing blood pressure taken once per year.

3. Patients with renal disease:

Monitor: BUN or serum creatinine
Time Frame: Every 3 months

Rationale: Since ACE inhibitors may cause acute renal failure or functional renal insufficiency, renal function should be monitored frequently in patients with renal disease (DE, p. 489).

Angiotensin-converting Enzyme (ACE) Inhibitor (cont'd)

CODE: 01

NEW MONITORING:

Flag: R5

Review Question: Indicate whether each monitoring action was done in the time specified.

Monitoring Actions:

1. All Patients:

Monitor: Blood pressure
Time Frame: Within 1 month of start of therapy

Rationale: ACE inhibitors reduce total peripheral vascular resistance, thereby lowering blood pressure. The initial dose may cause a precipitous fall in blood pressure, and, occasionally, symptomatic hypotension may develop later in the course of therapy (DE, p. 488). To monitor for this problem, blood pressure should be taken regularly, with standing blood pressure taken once per year.

2. All Patients:

Monitor: Renal function (defined as abnormal BUN or serum creatinine)
Time Frame: Within 1 month of start of therapy

Rationale: ACE inhibitors may cause acute renal failure or functional renal insufficiency. Renal function should be assessed with BUN or serum creatinine levels shortly after therapy is initiated (DE, p. 489).

3. All Patients:

Monitor: WBC and differential
Time Frame: Within 3 months of start of therapy

Rationale: Neutropenia occurs rarely, about 0.02 to 0.03% of the time with ACE inhibitors. If detected early, neutropenia is reversible. Fatal agranulocytosis occurs occasionally (DE, p. 489).

4. All Patients:

Monitor: Serum potassium
Time Frame: Within 1 month of start of therapy

Rationale: ACE inhibitors may occasionally cause hyperkalemia, even when given with a potassium-wasting diuretic. The risk of hyperkalemia is increased if potassium supplements or a potassium-sparing agent is given concurrently (DE, p. 488).

5. Patients with Renal Disease:

Monitor: BUN or serum creatinine
Time Frame: Within 3 months of start of therapy

Rationale: Since ACE inhibitors may cause acute renal failure or functional renal insufficiency, renal function should be monitored frequently in patients with renal disease (DE, p. 489).

ANTIADRENERGIC - PERIPHERAL ALPHA-BLOCKER

CODE: 03

INDICATIONS:

Flag: R2

Review Question: Indicate if any of the following conditions/diagnoses are in the medical record.

1. Hypertension: Prazosin and terazosin, quinazoline derivatives that affect blood pressure by reducing peripheral vascular resistance through blocking alpha-1 receptors, are similar in nature, but terazosin is longer-acting in duration (DE, p. 509-10).
2. Congestive heart failure: Prazosin, usually in combination with hydralazine, is useful in the treatment of congestive heart failure, although tolerance develops to the effects on CHF (DE, p. 591).
3. Raynaud's phenomenon: Prazosin has also been demonstrated to be useful for this condition; its action is through vasodilatation of arterioles (Harrison's, p. 1022).
4. Bladder outlet obstruction: Prazosin is effective for relief of this condition (DE, p. 743-4).
5. Benign prostatic hypertrophy: Prazosin and terazosin are useful for treatment of this condition (DE, p. 733).

DIAGNOSIS CONTRAINDICATIONS:

Flag: R3

Review Question: Look ahead in the medical record and indicate if any of the conditions are found.

Contraindications List 1: Absolute Contraindications: None

Contraindications List 2: Consider risk-benefit when:

1. Orthostatic hypotension: Marked orthostatic hypotension and syncope may follow administration of the first dose of prazosin or terazosin; this effect is most common if the initial dose of either drug is >1 mg (DE, p. 510).

DRUG CONTRAINDICATIONS: None

Flag: R4

Antiadrenergic - Peripheral Alpha-blocker (cont'd) CODE: 03

OLD MONITORING: Flag: R5

Review Question: Indicate whether each monitoring action was done in the time specified.

Monitoring Actions:

1. All Patients:

   Monitor: Blood pressure
   Time Frame: Every 6 months

2. All Patients:

   Monitor: Standing blood pressure
   Time Frame: Annually

   Rationale: Alpha blocking agents reduce total peripheral vascular resistance. Orthostatic hypotension, occasionally leading to collapse or loss of consciousness, may occur at the beginning of treatment. Prazosin and terazosin reduce both supine and standing blood pressure, but the hypotensive effect is most pronounced when patient is standing; therefore, regular standing blood pressure should be taken (DE, p. 509).

3. Patients with CHF:

   Monitor: Weight and lung exam
   Time Frame: Every 6 months

   Rationale: Fluid retention and edema are adverse effects of prazosin and terazosin, which can be monitored by weight and lung examination. Fluid retention will worsen CHF. During long-term therapy, tolerance to the benefits of the drug develops in patients with CHF (DE, p. 509).

Antiadrenergic - Peripheral Alpha-blocker (cont'd) CODE: 03

NEW MONITORING: **Flag: R5**

Review Question: **Indicate whether each monitoring action was done in the time specified.**

Monitoring Actions:

1. All Patients:

Monitor: Blood pressure
Time Frame: Within 1 month of start of therapy

Rationale: Alpha blocking agents reduce total peripheral vascular resistance. Orthostatic hypotension, occasionally leading to collapse or loss of consciousness, may occur at the beginning of treatment. Prazosin and terazosin reduce both supine and standing blood pressure, but the hypotensive effect is most pronounced when patient is standing; therefore, regular standing blood pressure should be taken DE, p. 509)

2. Patients with CHF:

Monitor: Weight and lung exam
Time Frame: Within 1 month of start of therapy

Rationale: Fluid retention and edema are adverse effects of prazosin and terazosin, which can be monitored by weight and lung examination. Fluid retention will worsen CHF. During long-term therapy, tolerance to the benefits of the drug develops in patients with CHF (DE, p. 509).

3. Patients with Angina:

Monitor: Educate patient about possible exacerbation
Time Frame: Within 1 month of start of therapy

Rationale: Reflex tachycardia is an adverse effect of prazosin; chest pain occurs rarely. Patients should be made aware of possibility of chest pain and educated to report (DE, p. 509).

4. Incontinent Patients:

Monitor: Follow-up visit
Time Frame: Within 1 month of start of therapy

Rationale: Urinary frequency and incontinence are rare adverse effects associated with prazosin therapy (DE, p. 509). Patient should be followed for these potential problems.

ANTIADRENERGIC - BETA-BLOCKER

CODE: 04

INDICATIONS: Flag: R2

Review Question: Indicate if any of the following conditions/diagnoses are in the medical record.

1. Hypertension: Beta-blockers are used if other Step 1 drugs have failed (JNC). The mechanism of blood pressure control involves decreased heart rate, decreased myocardial contractility, and decreased cardiac output. Note that labetalol also blocks alpha-1 sites and is not indicated as first-line pharmacologic therapy for blood pressure control (DE, p. 466-8, 503-6).

2. Angina: Beta-blockers are beneficial in treatment of angina because they decrease heart rate, myocardial contractility, and blood pressure; they may also increase coronary blood flow and oxygen supply. Propranolol and metoprolol may lower the ability of platelets to aggregate (DE, p. 469).

3. Ventricular arrhythmia: The antiarrhythmic effect of beta-blockers has been attributed to blockade of cardiac beta-adrenergic receptors and membrane-stabilizing activity (DE, p. 469).

4. Hypertrophic cardiomyopathy: Propranolol usually relieves symptoms and improves exercise tolerance; it is the mainstay of medical therapy, although other beta-blockers are also likely to be effective. (DE, p. 614).

5. Myocardial re-infarction prophylaxis: Long-term beta blockade offers beneficial effects after acute myocardial infarction (DE, p. 470).

6. Pheochromocytoma: Metaprolol and propranolol are used preoperatively in the surgical management of pheochromocytoma (DE, p. 193).

7. Migraine: Beta-blockers are useful for prophylaxis in patients with migraine who cannot take ergot drugs (e.g., those with angina, hypertension, cerebrovascular disease, and several other conditions). However, beta-blockers should not be used if there are any contraindications. Propranolol and nadolol are the agents commonly used for migraine prophylaxis. (DE, p. 123-4).

8. Tremor: Beta-adrenergic blockers, particularly propranolol, are the drugs of choice for therapy of essential tremor (DE, p. 352).

9. "Stage-fright" anxiety: Beta-blockers (except labetalol) are useful in treatment of anxiety when somatic symptoms (e.g., tremor, palpitations) are more prominent than psychologic symptoms (DE, p. 202, 214).

10. Hyperthyroidism or thyrotoxicosis: Propranolol or another beta-blocker may be used as adjunctive therapy in this condition to decrease cellular sensitivity to adrenergic stimulation (DE, p. 860).

11. Barlow's syndrome (mitral valve prolapse with chest pain): Beta-blockers are helpful in treatment of patients with mitral valve prolapse (Harrison's, p. 945).

12. Atrial arrhythmias: Beta-blockers are effective in treatment of arrythmias (DE, p. 469-71).

Antiadrenergic - Beta-blocker (cont'd) CODE: 04

DIAGNOSIS CONTRAINDICATIONS: **Flag: R3**

Review Question: Look ahead in the medical record and indicate if any of the conditions are found.

Contraindications List 1: Absolute Contraindications:

1. Heart block: Beta-blockers can cause fatal cardiac slowing in patients with AV block and should not be given to patients with AV conduction disturbances (more than first-degree AV block) (DE, p. 471).

2. Asthma/COPD: Beta-blockers may worsen respiratory function in patients with asthma, bronchitis, or COPD. Thus they should be used with caution (DE, p. 472).

Contraindications List 2: Consider risk-benefit when:

3. Mental depression: Beta-blockers may cause depression or aggravate an existing depressive condition (DE, p. 473).

4. Raynaud's phenomenon: Beta-blockers may cause cold extremities and may worsen Raynaud's phenomenon (DE, p. 471).

5. Intermittent claudication or chronic occlusive peripheral vascular disease: Beta-blockers may hinder blood flow to the calf or aggravate intermittent claudication (DE, p. 471).

DRUG CONTRAINDICATIONS: **Flag: R4**

Review Question: Look ahead in the medical record and indicate if any of the drugs are found.

Drug List 1: Absolute Contraindications: None

Drug List 2: Consider risk-benefit when:

1. Calcium channel blockers: These agents may enhance the depressant effect of beta-blockers on the myocardium and SA and AV nodes (DE, p. 474).

2. Insulin and oral antidiabetic agents: Beta-blockers potentiate and prolong hypoglycemia (DE, p. 474).

3. Indomethacin: This agent may diminish the antihypertensive efficacy of beta-blockers (DE, p. 474).

4. Timolol eyedrops: The effects of timolol are additive with those of other beta-blockers, and careful observation is needed if a patient is using topical timolol plus another beta-blocker (DE, p. 1815).

Antiadrenergic - Beta-blocker (cont'd) **CODE: 04**

OLD MONITORING **Flag: R5**

Review Question: Indicate whether each monitoring action was done in the time specified.

Monitoring Actions:

1. All Patients:

Monitor: Lung exam for evidence of wheezes or rales
Time Frame: Annually

Rationale: Beta-blockers may precipitate heart failure in patients with inadequate cardiac reserve; wheezes or rales in lungs may be evidence of CHF (DE, p. 471).

2. All Patients:

Monitor: Pulse rate
Time Frame: Annually

Rationale: Beta-blockers reduce heart rate, myocardial contractility, and cardiac output and may cause pronounced bradycardia. The drugs should be discontinued if bradycardia is marked and symptomatic; however, asymptomatic bradycardia is common and should not result in stopping the drug (DE, p. 470).

3. All Patients:

Monitor: Blood pressure
Time Frame: Every 6 months

4. All Patients:

Monitor: Standing blood pressure
Time Frame: Annually

Rationale: Beta-blockers may cause pronounced hypotension, which can be monitored with regular standing blood pressure measurements (DE, p. 471).

5. Patients with Depression:

Monitor: Mental state (mood)
Time Frame: Annually

Rationale: Fatigue and lethargy are common side effects with beta-blocking drugs. Depressed patients should be monitored for possible exacerbation of condition (DE, p. 473).

6. Patients with Asthma or Emphysema:

Monitor: Lung exam for evidence of worsening failure
Time Frame: Annually

Rationale: Beta-blockers increase airway resistance and may precipitate an asthmatic attack in patients with asthma or chronic bronchitis. Status of respiratory condition may be determined by monitoring lungs (DE, p. 472).

Antiadrenergic - Beta-blocker (cont'd) CODE: 04

NEW MONITORING: Flag: R5

Review Question: Indicate whether each monitoring action was done in the time specified.

Monitoring Actions:

1. All Patients:

Monitor:	Lung exam for evidence of wheezes or rales	Rationale: Beta-blockers may precipitate heart failure in patients with inadequate cardiac reserve; wheezes or rales in lungs may be evidence of CHF (DE, p. 471).
Time Frame:	Within 1 month of start of therapy	

2. All Patients:

Monitor:	Pulse rate	Rationale: Beta-blockers reduce heart rate, myocardial contractility, and cardiac output and may cause pronounced bradycardia. The drugs should be discontinued if bradycardia is marked and symptomatic; however, asymptomatic bradycardia is common and should not result in stopping the drug (DE, p. 470).
Time Frame:	Within 1 month of start of therapy	

3. All Patients:

Monitor:	Blood pressure	Rationale: Beta-blockers may cause pronounced hypotension, which can be monitored with regular standing blood pressure measurements (DE, p. 471).
Time Frame:	Within 1 month of start of therapy	

4. Patients with Depression:

Monitor:	Mental state	Rationale: Fatigue and lethargy are common side effects with beta-blocking drugs. Depressed patients should be monitored for possible exacerbation of condition (DE, p. 473).
Time Frame:	Within 3 months of start of therapy	

5. Patients on Oral Hypoglycemics or Insulin:

Monitor:	Educate patient about masking of hypoglycemia	Rationale: Beta-blockers impair normal response to hypoglycemia and may mask hypoglycemic symptoms. Patients should be educated about masking of symptoms. In some cases beta-blockers may potentiate and prolong insulin-induced hypoglycemia (DE, p. 473).
Time Frame:	At start of therapy and at each subsequent visit	

6. Patients with Asthma or Emphysema:

Monitor:	Lung exam for evidence of worsening failure	Rationale: Beta-blockers increase airway resistance and may precipitate an asthmatic attack in patients with asthma or chronic bronchitis. Status of respiratory condition may be determined by monitoring lungs (DE, p. 472).
Time Frame:	Within 1 month of start of therapy	

ANTIADRENERGIC - CENTRALLY ACTING

CODE: 05

INDICATIONS:

Flag: R2

Review Question: Indicate if any of the following conditions/diagnoses are in the medical record.

1. Hypertension: Clonidine, guanabenz, guanfacine, and methyldopa are useful in the treatment of elevated blood pressure; they are usually administered with a diuretic. Their mechanism includes activation of inhibitory alpha-2 receptors in the central nervous system, resulting in a decreased sympathetic activity and lowered total peripheral vascular resistance (DE, p. 512-4). These agents are useful when Step 1 therapy has been inadequate for blood pressure control (JNC). Reserpine leads to depletion of catecholamine stores and to lowered cardiac output, heart rate, and peripheral resistance. It is usually given with a diuretic (DE, p. 514-5).
2. Vascular headache: Clonidine may be useful for treatment of migraine headaches in some patients (Adams and Victor, p. 148).
3. Nicotine withdrawal: Clonidine may be useful during smoking cessation (Harrison's, p. 2161).

DIAGNOSIS CONTRAINDICATIONS:

Flag: R3

Review Question: Look ahead in the medical record and indicate if any of the conditions are found.

Contraindications List 1: Absolute Contraindications:

1. Hepatic disease (active): Use of methyldopa may lead to hepatitis (DE, p. 514).

Contraindications List 2: Consider risk-benefit when:

2. Mental depression: All of these drugs may cause depression. In particular, reserpine is especially likely to lead to depression in the elderly (DE, p. 515).

DRUG CONTRAINDICATIONS:

Flag: R4

Review Question: Look ahead in the medical record and indicate if any of the drugs are found.

Drug List 1: Absolute Contraindications: None

Drug List 2: Consider risk-benefit when:

1. Tricyclic antidepressants: A decreased effect of clonidine may be noted if these drugs are administered concurrently because they antagonize clonidine's antihypertensive effect (DE, p. 512).
2. Monoamine oxidase inhibitors: These drugs should not be given concurrently with methyldopa (DE, p. 268) or other centrally acting antiadrenergic drugs (PDR, p. 1742-3).

Antiadrenergic - Centrally Acting (cont'd) CODE: 05

OLD MONITORING **Flag: R5**

Review Question: Indicate whether each monitoring action was done in the time specified.

Monitoring Actions:

1. All Patients:

Monitor: Blood pressure
Time Frame: Every 6 months

Rationale: Centrally acting antiadrenergic drugs lower blood pressure by reducing sympathetic outflow and total peripheral resistance. Hypotension is an adverse effect (DE, p. 512). Patient's blood pressure should be monitored at regular intervals.

2. All Patients:

Monitor: Standing blood pressure
Time Frame: Annually

3. All Patients:

Monitor: Mental status (mood)
Time Frame: Annually

Rationale: Centrally acting antiadrenergic drugs are central nervous system depressants; depression and a decrease in mental acuity can occur. With rauwolfia alkaloids in small amounts depression sometimes occurs, but is common with high doses (DE, p. 514).

4. Patients on Methyldopa:

Monitor: CBC, hematocrit,
Time Frame: Annually

Rationale: Leukopenia, thrombocytopenia, and hemolytic anemia may occur with methyldopa. While they are uncommon reactions, they are reversible conditions and should be monitored with CBC and hematocrit (DE, p. 514).

5. Patients on Methyldopa:

Monitor: SGOT and SGPT (ALT, AST)

Rationale: Methyldopa may induce hepatitis during the first 6-12 weeks of treatment; in a few cases fatal hepatic necrosis may occur. Liver functioning should be monitored with tests (ALT, AST) performed at regular intervals for the first several months of treatment (DE, p. 514).

Antiadrenergic - Centrally Acting (cont'd) CODE: 05

NEW MONITORING: **Flag: R5**

Review Question: Indicate whether each monitoring action was done in the time specified.

Monitoring Actions:

1. All Patients:

Monitor:	Blood pressure	Rationale: Centrally acting antiadrenergic drugs lower blood pressure by reducing sympathetic outflow and total peripheral resistance. Hypotension is an adverse effect (DE, p. 512). Patient's blood pressure should be monitored at regular intervals.
Time Frame:	Within 1 month of start of therapy	

2. All Patients:

Monitor:	Mental status (mood)	Rationale: Centrally acting antiadrenergic drugs are central nervous system depressants; depression and a decrease in mental acuity can occur. With rauwolfia alkaloids in small amounts depression sometimes occurs, but is common with high doses (DE, p. 514).
Time Frame:	Within 3 months of start of therapy	

3. Patients on Methyldopa:

Monitor:	Hematocrit and CBC	Rationale: Leukopenia, thrombocytopenia, and hemolytic anemia may occur with methyldopa. While they are uncommon reactions, they are reversible conditions and should be monitored with CBC and hematocrit (DE, p. 514).
Time Frame:	Within 3 months of start of therapy	

4. Patients on Methyldopa:

Monitor:	Liver function (ALT, AST)	Rationale: Methyldopa may induce hepatitis during the first 6-12 weeks of treatment; in a few cases fatal hepatic necrosis may occur. Liver functioning should be monitored with tests (ALT, AST) performed at regular intervals for the first several months of treatment (DE, p. 514).
Time Frame:	Within 3 months of start of therapy	

CALCIUM CHANNEL BLOCKER

CODE: 06

INDICATIONS:

Flag: R2

Review Question: Indicate if any of the following conditions/diagnoses are in the medical record.

1. Hypertension: Calcium channel blockers are useful for initial and long-term treatment of hypertension. Because they are natriuretic, concomitant diuretic therapy is not needed (DE, p. 479, 506). These drugs are well tolerated by the elderly and are equally effective for black and white patients (DE, p. 506).

2. Angina, stable or vasospastic: Verapamil and diltiazem are the preferred calcium channel blockers for treatment of angina. They relieve anginal symptoms by relieving coronary artery spasm (DE, p. 479).

3. Migraine and cluster headaches: Verapamil and other calcium channel blockers may be effective for treatment of these conditions (DE, p. 480).

4. Hypertrophic cardiomyopathy: Verapamil improves cardiac function and relieves symptoms; however, it may cause severe adverse reactions in those with the obstructive form of the disease. It is most appropriate in patients refractory to beta-blockers (DE, p. 479).

5. Raynaud's phenomenon: Nifedipine and diltiazem can be useful therapy for this condition, but side effects may limit their use (Harrison's, p. 1447).

DIAGNOSIS CONTRAINDICATIONS:

Flag: R3

Review Question: Look ahead in the medical record and indicate if any of the conditions are found.

Contraindications List 1: Absolute Contraindications:

1. Second- and third-degree heart block: Verapamil and diltiazem should not be given to patients with these conditions (DE, p. 481).

2. Sick-sinus syndrome: Diltiazem and verapamil should be avoided in patients with this syndrome (DE, p. 481).

3. Wolff-Parkinson-White syndrome (with atrial flutter or fibrillation): Diltiazem and verapamil should be avoided in patients with this condition (DE, p. 481).

Contraindications List 2: Consider risk-benefit when:

4. Bradycardia: Since verapamil and diltiazem can cause bradycardia, they have the potential to aggravate this condition if it exists (DE, p. 481).

5. Congestive heart failure: Calcium channel blockers may cause or aggravate CHF (DE, p. 481-2).

DRUG CONTRAINDICATIONS: None

Flag: R4

Calcium Channel Blocker (cont'd) **CODE: 06**

OLD MONITORING

Flag: R5

Review Question: Indicate whether each monitoring action was done in the time specified.

Monitoring Actions:

1. All Patients:

Monitor:	Blood pressure	Rationale: Calcium channel blockers reduce blood pressure by decreasing systemic vascular resistance. Blood pressure should be monitored regularly, with standing blood pressure taken to detect possible orthostatic hypotension (DE, p. 479, 481).
Time Frame:	Every 6 months	

2. All Patients:

Monitor:	Standing blood pressure	Rationale: Calcium channel blockers reduce blood pressure by decreasing systemic vascular resistance. Blood pressure should be monitored regularly, with standing blood pressure taken to detect possible orthostatic hypotension (DE, p. 479, 481).
Time Frame:	Annually	

NEW MONITORING:

Flag: R5

Review Question: Indicate whether each monitoring action was done in the time specified.

Monitoring Actions:

1. All Patients:

Monitor:	Blood pressure	Rationale: Calcium channel blockers reduce blood pressure by decreasing systemic vascular resistance. Blood pressure should be monitored regularly (DE, p. 479, 481).
Time Frame:	Within 1 month of start of therapy	

2. All Patients:

Monitor:	Pulse	Rationale: Calcium channel blockers prolong AV conduction time and refractory period of the AV node, reducing heart rate and myocardial contractility (DE, p. 481). All patients should be monitored for bradycardia.
Time Frame:	Within 1 month of start of therapy	

3. Patients on Beta-blocker:

Monitor:	Pulse rate and rhythm or ECG	Rationale: Severe adverse reactions, including sinus arrest and AV block, have occurred when calcium channel blockers are combined with beta-blockers (DE, p. 481). An ECG or pulse rate and rhythm should be monitored to detect possible problems.
Time Frame:	Within 1 month of start of therapy	

4. Patients on Digitalis and Verapamil is Added:

Monitor:	Digitalis or lower digoxin dose	Rationale: Verapamil increases serum digoxin levels, resulting in increased serum digitoxin concentrations and digoxin toxicity (DE, p. 481).
Time Frame:	Within 1 month of start of therapy	

DIRECT-ACTING VASODILATOR

CODE: 07

INDICATIONS: **Flag: R2**

Review Question: Indicate if any of the following conditions/diagnoses are in the medical record.

1. Hypertension: Hydralazine and minoxidil exert their antihypertensive effects by decreasing total peripheral vascular resistance. Minoxidil is more potent and longer-acting than hydralazine; minoxidil is preferable to hydralazine for long-term management of blood pressure (DE, p. 516-7). These agents were used when Step 1 therapies were inadequate for blood pressure control (JNC); however, because of their toxic effects, hydralazine and minoxidil are rarely indicated.

DIAGNOSIS CONTRAINDICATIONS: **Flag: R3**

Review Question: Look ahead in the medical record and indicate if any of the conditions are found.

Contraindications List 1: Absolute Contraindications: None

Contraindications List 2: Consider risk-benefit when:

1. Angina or coronary artery disease: Hydralazine may lead to myocardial ischemia in patients with coronary artery disease (DE, p. 517; 1, p. 377). Minoxidil may cause anginal attacks, especially if beta blockade is inadequate. Myocardial infarction is a rare sequela of minoxidil administration (DE, p. 518; Harrison's, p. 377).

2. Mitral valve disease: Since hydralazine and minoxidil aggravate angina and coronary insufficiency, which are common in patients with mitral valve disease, these drugs should not be given to such patients (Hurst; p. 835).

DRUG CONTRAINDICATIONS: None **Flag: R4**

Direct-Acting Vasodilator (cont'd) **CODE: 07**

OLD MONITORING: **Flag: R5**

Review Question: Indicate whether each monitoring action was done in the time specified.

Monitoring Actions:

1. All Patients:

Monitor: Blood pressure
Time Frame: Every 6 months

Rationale: Direct-acting vasodilators reduce blood pressure by relaxing arteriolar smooth muscle. While their effect on blood pressure is unpredictable, severe orthostatic effects have developed (DE, p. 518), thus regular blood pressure measurements and occasional standing blood pressure measurements are important.

2. All Patients:

Monitor: Standing blood pressure
Time Frame: Annually

Rationale: Direct-acting vasodilators reduce blood pressure by relaxing arteriolar smooth muscle. While their effect on blood pressure is unpredictable, severe orthostatic effects have developed (DE, p. 518), thus regular blood pressure measurements and occasional standing blood pressure measurements are important.

3. Patients on Minoxidil:

Monitor: Sodium and water retention (defined as weight measurement)
Time Frame: Every 3 months

Rationale: Sodium and water retention, manifested by weight gain, is a common adverse effect with minoxidil. Significant fluid volume overload may precipitate heart failure (DE, p. 518).

4. Patients with CHF:

Monitor: Weight and lung exam
Time Frame: Every 6 months

Rationale: Sodium and water retention, manifested by weight gain, is a common adverse effect with vasodilators. Significant fluid volume overload may worsen CHF (DE, p. 518).

5. Patients receiving 300 mg or more of hydralazine daily and develop arthralgia, fever, chest pain, or continued malaise:

Monitor: Antinuclear antibody titer and CBC
Time Frame: Every 6 months

Rationale: Hydralazine may produce an acute rheumatoid syndrome simulating systemic lupus erythematosus with a positive antinuclear antibody test. Symptomatic patients should receive an ANA titer and a CBC to verify condition. These effects are generally reversible when the drug is withdrawn (DE, p. 518).

Direct-acting Vasodilator (cont'd) CODE: 07

NEW MONITORING: Flag: R5

Review Question: Indicate whether each monitoring action was done in the time specified.

Monitoring Actions:

1. All Patients:

Monitor: Blood pressure
Time Frame: Within 1 month of start of therapy

Rationale: Direct-acting vasodilators reduce blood pressure by relaxing arteriolar smooth muscle. While their effect on blood pressure is unpredictable, severe orthostatic effects have developed (DE, p. 518), thus regular blood pressure measurements and occasional standing blood pressure measurements are important.

2. Patients with CHF:

Monitor: Weight and lung exam
Time Frame: Within 1 month of start of therapy

Rationale: Sodium and water retention, manifested by weight gain, is a common adverse effect with vasodilators. Significant fluid volume overload may worsen CHF (DE, p. 518).

3. Patients on Minoxidil:

Monitor: Sodium and water retention (defined as weight measurement)
Time Frame: Within 1 month of start of therapy

Rationale: Sodium and water retention, manifested by weight gain, is a common adverse effect with minoxidil. Significant fluid volume overload may precipitate heart failure (DE, p. 518).

4. Patients receiving 300 mg or more of hydralazine daily and develop arthralgia, fever, chest pain, or continued malaise:

Monitor: Antinuclear antibody titer and CBC
Time Frame: Within 6 months of start of therapy

Rationale: Hydralazine may produce an acute rheumatoid syndrome simulating systemic lupus erythematosus with a positive antinuclear antibody test. Symptomatic patients should receive an ANA titer and a CBC to verify condition. These effects are generally reversible when the drug is withdrawn (DE, p. 518).

5. Patients with Angina:

Monitor: Educate patient about possible exacerbation of angina
Time Frame: Within 1 month of start of therapy

Rationale: Vasodilators increase heart rate and cardiac output and may precipitate myocardial ischemia in patients with coronary artery disease (DE, p. 518). Patients should be warned about possible exacerbation of angina.

DIURETIC - LOOP

CODE: 08

INDICATIONS:

Flag: R2

Review Question: Indicate if any of the following conditions/diagnoses are in the medical record.

1. Edema or pulmonary edema: These potent diuretics are usually reserved for patients with refractory edema or acute pulmonary edema (DE, p. 696).
2. Hypertension: These drugs are generally used for treatment of hypertension only in patients with impaired renal function (DE, p. 500).
3. Acute hypercalcemia: Furosemide inhibits calcium reabsorption; therefore, it is useful for patients with hypercalcemia (Harrison's, p. 1913, 1937).

DIAGNOSIS CONTRAINDICATIONS:

Flag: R3

Review Question: Look ahead in the medical record and indicate if any of the conditions are found.

Contraindications List 1: Absolute Contraindications: None

Contraindications List 2: Consider risk-benefit when:

1. Patient has renal impairment: Large doses of loop diuretics may cause ototoxicity in patients with renal failure (DE, p. 696-8).

DRUG CONTRAINDICATIONS:

Flag: R4

Review Question: Look ahead in the medical record and indicate if any of the drugs are found.

Drug List 1: Absolute Contraindications:

1. Corticosteroids: The hypokalemic effect of loop diuretics may be enhanced by concomitant therapy with adrenal corticosteroids (DE, p. 691).
2. Lithium: Diuretics increase the risk of lithium toxicity and should generally not be given to patients receiving lithium (DE, p. 279-80; PDR, p. 1984).

Drug List 2: Consider risk-benefit when: None

Diuretic - Loop (cont'd)

CODE: 08

OLD MONITORING

Flag: R5

Review Question: Indicate whether each monitoring action was done in the time specified.

Monitoring Actions:

1. All Patients:

Monitor: BUN or serum creatinine
Time Frame: Every 6 months

Rationale: Loop diuretics block sodium chloride transport in the kidney, resulting in diuresis and fluid and electrolyte losses. Renal function should be monitored frequently with BUN or serum creatinine levels to prevent extensive fluid and electrolyte losses (DE, p. 696).

2. All Patients:

Monitor: Serum potassium
Time Frame: Every 6 months

Rationale: Loop diuretics block sodium chloride transport, resulting in fluid and electrolyte losses, specifically, hypokalemia. Serum electrolytes should be monitored carefully in order to initiate treatment with a potassium-sparing diuretic or a potassium supplement (DE, p. 696).

3. All Patients:

Monitor: Serum sodium
Time Frame: Every 6 months

Rationale: Loop diuretics block sodium chloride transport, resulting in fluid and electrolyte losses; hyponatremia may occur. Serum electrolytes should be monitored carefully in order to initiate appropriate prophylactic measures (DE, p. 696).

4. Patients with Diabetes:

Monitor: Blood glucose
Time Frame: Every 3 months

Rationale: Because furosemide may cause hyperglycemia and bumetanide may impair glucose tolerance (DE, p. 696), diabetic patients should have frequent blood glucose monitoring.

5. Patients on Lithium:

Monitor: Serum lithium levels
Time Frame: Every 3 months

Rationale: Patients taking lithium need frequent monitoring of serum lithium levels to avoid lithium toxicity, as adverse reactions can occur with doses close to therapeutic levels. When sodium is depleted and electrolyte imbalance occurs (due to diuretic use), lithium is reabsorbed by the kidneys and may accumulate to toxic levels (DE, p. 279, 280).

Diuretic - Loop (cont'd) **CODE: 08**

NEW MONITORING: **Flag: R5**

Review Question: Indicate whether each monitoring action was done in the time specified.

Monitoring Actions:

1. All Patients:

Monitor: BUN or serum creatinine
Time Frame: Within 1 month of start of therapy

Rationale: Loop diuretics block sodium chloride transport in the kidney, resulting in diuresis and fluid and electrolyte losses. Renal function should be monitored frequently with BUN or serum creatinine levels to prevent extensive fluid and electrolyte losses (DE, p. 696).

2. All Patients:

Monitor: Serum sodium
Time Frame: Within 1 month of start of therapy

Rationale: Loop diuretics block sodium chloride transport, resulting in fluid and electrolyte losses; hyponatremia may occur. Serum electrolytes should be monitored carefully in order to initiate appropriate prophylactic measures (DE, p. 696).

3. All Patients:

Monitor: Serum potassium
Time Frame: Within 1 month of start of therapy

Rationale: Loop diuretics block sodium chloride transport, resulting in fluid and electrolyte losses, specifically, hypokalemia. Serum electrolytes should be monitored carefully in order to initiate treatment with a potassium-sparing diuretic or a potassium supplement (DE, p. 696).

4. Patients with Diabetes:

Monitor: Blood glucose
Time Frame: Within 3 months of start of therapy

Rationale: Because furosemide may cause hyperglycemia and bumetanide may impair glucose tolerance (DE, p. 696), diabetic patients should have frequent blood glucose monitoring.

5. Patients on Lithium:

Monitor: Serum lithium levels
Time Frame: Within 3 months of start of therapy

Rationale: Patients taking lithium need frequent monitoring of serum lithium levels to avoid lithium toxicity, as adverse reactions can occur with doses close to therapeutic levels. When sodium is depleted and electrolyte imbalance occurs (due to diuretic use), lithium is reabsorbed by the kidneys and may accumulate to toxic levels (DE, p. 279, 280).

DIURETIC, POTASSIUM-SPARING

CODE: 09

INDICATIONS:

Flag: R2

Review Question: Indicate if any of the following conditions/diagnoses are in the medical record.

1. Edema: These three drugs are used to treat edema associated with other primary diseases (DE, p. 699-700).
2. Hypertension: These drugs can be effective in treating hypertension. However, because of their limitations, they are generally used only if other therapy (e.g., thiazide) fails. (DE, p. 699-701; Harrison's, p. 1009; JNC).
3. Congestive heart failure: Potassium-sparing diuretics are used to treat edema associated with congestive heart failure (DE, p. 699-700).
4. Primary hyperaldosteronism: Fluid retention associated with this condition can be treated with potassium-sparing diuretics (Harrison's, p. 1009). Spironolactone can be used for long-term treatment of hyperaldosteronism due to bilateral adrenal hyperplasia (DE, p. 848).
5. Polycystic ovary disease: Spironolactone is effective for treatment of hirsutism (which is associated with polycystic ovary disease) (DE, p. 947).

DIAGNOSIS CONTRAINDICATIONS:

Flag: R3

Review Question: Look ahead in the medical record and indicate if any of the conditions are found.

Contraindications List 1: Absolute Contraindications:

1. Hyperkalemia: The potassium-sparing diuretics can cause hyperkalemia, and, since renal function decreases with age, these drugs should be used cautiously in the elderly (DE, p. 699-701).
2. Renal impairment: Renal impairment predisposes to life-threatening hyperkalemia if a potassium-sparing diuretic is given (DE, p. 699).

Contraindications List 2: Consider risk-benefit when: None

Diuretic, Potassium-sparing (cont'd)

CODE: 09

DRUG CONTRAINDICATIONS:

Flag: R4

Review Question: Look ahead in the medical record and indicate if any of the drugs are found.

Drug List 1: Absolute Contraindications:

1. Oral potassium supplements: Risk of hyperkalemia is increased by concomitant administration of potassium supplements and potassium-sparing diuretics (DE, p. 699).
2. ACE inhibitors: Concomitant administration of ACE inhibitors and spironolactone may increase the risk of hyperkalemia (DE, p. 699).

Drug List 2: Consider risk-benefit when:

3. Spironolactone is given without a potassium-losing diuretic: Combined therapy reduces potassium excretion and minimizes the risk of hyperkalemia (DE, p. 699).

Diuretic, Potassium-sparing (cont'd)

CODE: 09

OLD MONITORING

Flag: R5

Review Question: Indicate whether each monitoring action was done in the time specified.

Monitoring Actions:

1. All Patients:

Monitor:	BUN or serum creatinine	Rationale: Renal functioning decreases with age. Subsequent renal impairment may lead to hyperkalemia in patients taking potassium-sparing diuretics (DE, p. 699).
Time Frame:	Every 6 months	

2. All Patients:

Monitor:	Serum sodium	Rationale: Potassium-sparing diuretics promote sodium excretion. Monitoring of serum sodium levels can detect the rare adverse effect (DE, p. 699).
Time Frame:	Every 6 months	

3. All Patients:

Monitor:	Serum potassium	Rationale: Potassium-sparing diuretics promote excretion of sodium and conserve potassium. Careful monitoring of serum potassium levels is necessary to detect hyperkalemia, which is a common adverse effect (DE, p. 699).
Time Frame:	Every 6 months	

4. Patients on Lithium:

Monitor:	Serum lithium levels	Rationale: Patients taking lithium need frequent monitoring of serum lithium levels to avoid lithium toxicity, as adverse reactions can occur with doses close to therapeutic levels. When sodium is depleted and electrolyte imbalance occurs (as in the case of diuretic use), lithium is reabsorbed by the kidneys and may accumulate to toxic levels (DE, p. 279, 280).
Time Frame:	Every 3 months	

Diuretic, Potassium-sparing (cont'd) **CODE: 09**

NEW MONITORING: **Flag: R5**

Review Question: Indicate whether each monitoring action was done in the time specified.

Monitoring Actions:

1. All Patients:

Monitor:	BUN or serum creatinine	Rationale: Renal functioning decreases with age. Subsequent renal impairment may lead to hyperkalemia in patients taking potassium-sparing diuretics (DE, p. 699).
Time Frame:	Within 1 month of start of therapy	

2. All Patients:

Monitor:	Serum sodium	Rationale: Potassium-sparing diuretics promote sodium excretion. Monitoring of serum sodium levels can detect the rare adverse effect (DE, p. 699).
Time Frame:	Within 1 month of start of therapy	

3. All Patients:

Monitor:	Serum potassium	Rationale: Potassium-sparing diuretics promote excretion of sodium and conserve potassium. Careful monitoring of serum potassium levels is necessary to detect hyperkalemia, which is a common adverse effect (DE, p. 699).
Time Frame:	Within 1 month of start of therapy	

4. Patients on Lithium:

Monitor:	Serum lithium levels	Rationale: Patients taking lithium need frequent monitoring of serum lithium levels to avoid lithium toxicity, as adverse reactions can occur with doses close to therapeutic levels. When sodium is depleted and electrolyte imbalance occurs (as in the case of diuretic use), lithium is reabsorbed by the kidneys and may accumulate to toxic levels (DE, p. 279, 280).
Time Frame:	Within 3 months of start of therapy	

DIURETIC, THIAZIDE-TYPE

CODE: 10

INDICATIONS:

Flag: R2

Review Question: Indicate if any of the following conditions/diagnoses are in the medical record.

1. Hypertension: Thiazides are indicated as first-line pharmacological therapy for essential hypertension (DE, p. 690-2).
2. Edema: Thiazides are used for treatment of edema associated with cardiac failure or with corticosteroid or estrogen therapy (DE, p. 690-2).
3. Diabetes insipidus: Thiazide diuretics are used for treatment of diabetes insipidus (DE, p. 690).
4. Renal calculi (calcium-containing): Thiazides are used for treatment of renal calculi (DE, p. 689-90).

DIAGNOSIS CONTRAINDICATIONS:

Flag: R3

Review Question: Look ahead in the medical record and indicate if any of the conditions are found.

Contraindications List 1: Absolute Contraindications:

1. Renal impairment: Thiazides are usually ineffective in patients with impaired renal function (DE, p. 692).
2. Hypercalcemia: Thiazides may increase the concentration of calcium in serum by increasing the protein-bound fraction. They also increase calcium absorption in the distal convoluted tubule and, by contracting the plasma volume, enhance proximal calcium reabsorptionm (DE, p. 693).

Contraindications List 2: Consider risk-benefit when:

3. Patient has gout: Since thiazides produce hyperuricemia, if they must be given to a patient with gout, colchicine plus a uricosuric agent should be given concomitantly (DE, p. 693).
4. Patient has impaired hepatic function: Thiazides may aggravate hepatic insufficiency. Deterioration of mental function and coma may occur in patients with cirrhosis of the liver (Gilman et al., p. 721).
5. Patient has systemic lupus erythematosus: Patients with systemic lupus erythematosus are often treated with corticosteroids, and the two types of drugs should not be used concomitantly (DE, p. 693, 1620; Harrison's, p. 1716-7). Furthermore, the thiazides belong to the sulfonamide class of compounds, and sulfonamides may cause lupus (DE, p. 1336).

Diuretic, Thiazide-type (cont'd) **CODE: 10**

DRUG CONTRAINDICATIONS: **Flag: R4**

Review Question: Look ahead in the medical record and indicate if any of the drugs are found.

Drug List 1: Absolute Contraindications: None

Drug List 2: Consider risk-benefit when:

1. Patient is taking oral antidiabetic drugs: Elderly patients taking chlorpropamide (asulfonylurea) may retain water if a thiazide diuretic is given concurrently (DE, p. 891). Long-term therapy with thiazides may increase fasting blood glucose levels, and the dose of hypoglycemic drug may need to be adjusted (DE, p. 693).

2. Insulin: Since thiazide therapy may cause an increase in fasting blood glucose levels and decrease in glucose tolerance, the dose of insulin may need to be adjusted (DE, p. 693).

3. Long-term, high-dose corticosteroid therapy (1 month or longer, with average dose of ≥20 mg of prednisone/day): Both thiazides and corticosteroids increase blood glucose levels; therefore, if possible, the two types of drug should not be given concurrently (DE, p. 693; Harrison's, p. 1716-7).

Diuretic, Thiazide-type (cont'd) CODE: 10

OLD MONITORING

Flag: R5

Review Question: Indicate whether each monitoring action was done in the time specified.

Monitoring Actions:

1. All Patients:

Monitor: BUN or serum creatinine
Time Frame: Every 6 months

Rationale: Thiazides are usually ineffective when renal function is impaired and may cause a reversible elevation of blood urea nitrogen levels (DE, p. 692).

2. All Patients:

Monitor: Serum sodium
Time Frame: Every 6 months

Rationale: Thiazides increase the excretion of sodium. Long-acting thiazides may cause severe electrolyte disturbances. To detect possible problems, serum sodium levels should be determined periodically and the lowest effective dose used (DE, p. 692).

3. All Patients:

Monitor: Serum potassium
Time Frame: Every 6 months

Rationale: Thiazides increase the excretion of potassium so that serum potassium levels frequently fall during long therapy causing mild hypochloremic alkalosis (DE, p. 692). Potassium should be monitored to detect this effect.

4. Patients with Impaired Liver Function:

Monitor: Serum sodium and serum potassium
Time Frame: Every 3 months

Rationale: Hyponatremia is a common complication in patients with impaired liver function. All diuretics, and especially thiazide diuretics, should be used with caution in patients with chronic liver disease (DE, p. 693).

5. Patients on Lithium:

Monitor: Serum lithium levels
Time Frame: Every 3 months

Rationale: Patients taking lithium need frequent monitoring of serum lithium to avoid lithium toxicity, as adverse reactions can occur with doses close to therapeutic levels. When sodium is depleted and electrolyte imbalance occurs (as in the case of diuretic use), lithium is reabsorbed by the kidneys and may accumulate to toxic levels (DE, p. 279, 280).

6. Patients with Diabetes:

Monitor: Blood glucose
Time Frame: Every 3 months

Rationale: Thiazides increase fasting blood glucose levels and decrease glucose tolerance during long-term therapy. Diabetic patients require frequent blood glucose monitoring during thiazide therapy DE, p. 692).

7. Patients on Long-term Corticosteroids:

Monitor: Serum potassium
Time Frame: Every 3 months

Rationale: Corticosteroids cause sodium retention and potassium depletion. When combined with thiazide diuretics they enhance the hypokalemic effect (DE, p. 627, 691).

Diuretic, Thiazide-type (cont'd)

CODE: 10

NEW MONITORING:

Flag: R5

Review Question: Indicate whether each monitoring action was done in the time specified.

Monitoring Actions:

1. All Patients:

   Monitor: BUN or serum creatinine
   Time Frame: Within 1 month of start of therapy

   Rationale: Thiazides are usually ineffective when renal function is impaired and may cause a reversible elevation of blood urea nitrogen levels (DE, p. 692).

2. All Patients:

   Monitor: Serum sodium
   Time Frame: Within 1 month of start of therapy

   Rationale: Thiazides increase the excretion of sodium. Long-acting thiazides may cause severe electrolyte disturbances. To detect possible problems, serum sodium levels should be determined periodically and the lowest effective dose used (DE, p. 692).

3. All Patients:

   Monitor: Serum potassium
   Time Frame: Within 1 month of start of therapy

   Rationale: Thiazides increase the excretion of potassium so that serum potassium levels frequently fall during long therapy causing mild hypochloremic alkalosis (DE, p. 692). Potassium should be monitored to detect this effect.

4. Patients with Diabetes:

   Monitor: Blood glucose
   Time Frame: Within 3 months of start of therapy

   Rationale: Thiazides increase fasting blood glucose levels and decrease glucose tolerance during long-term therapy. Diabetic patients require frequent blood glucose monitoring during thiazide therapy DE, p. 692).

5. Patients on Lithium:

   Monitor: Serum lithium levels
   Time Frame: Within 3 months of start of therapy

   Rationale: Patients taking lithium need frequent monitoring of serum lithium to avoid lithium toxicity, as adverse reactions can occur with doses close to therapeutic levels. When sodium is depleted and electrolyte imbalance occurs (as in the case of diuretic use), lithium is reabsorbed by the kidneys and may accumulate to toxic levels (DE, p. 279, 280).

6. Patients on Long-term Corticosteroids:

   Monitor: Serum potassium
   Time Frame: Within 3 months of start of therapy

   Rationale: Corticosteroids cause sodium retention and potassium depletion. When combined with thiazide diuretics they enhance the hypokalemic effect (DE, p. 627, 691).

7. Patients with Impaired Liver Function:

   Monitor: Serum potassium and serum sodium
   Time Frame: Within 3 months of start of therapy

   Rationale: Hyponatremia is a common complication in patients with impaired liver function. All diuretics, and especially thiazide diuretics, should be used with caution in patients with chronic liver disease (DE, p. 693).

ACE INHIBITOR + THIAZIDE DIURETIC

CODE: 11

INDICATIONS: Flag: R2

Review Question: Indicate if any of the following conditions/diagnoses are in the medical record.

1. Hypertension: Only if stepped therapy has failed. (See p. 144.)

DIAGNOSIS CONTRAINDICATIONS: Flag: R3

Review Question: Look ahead in the medical record and indicate if any of the conditions are found.

Contraindications List 1: Absolute Contraindications:

1. Severe renal impairment:
   Defined as: BUN >50 mg/dL, or creatinine >2.5 mg/dL
2. Hypercalcemia:
   Defined as: calcium >12 mg/dL
3. Hyperuricemia:
   Defined as: serum uric acid >10 mg/dL

Contraindications List 2: Consider risk-benefit when:

4. Angioedema, history of, related to previous ACE inhibitor treatment
5. Hyperkalemia:
   Defined as: serum potassium >5.7 meq/L
6. Gout
7. COPD
8. Impaired hepatic function
9. Systemic lupus erythematosus

ACE Inhibitor + Thiazide Diuretic (cont'd) **CODE: 11**

DRUG CONTRAINDICATIONS: **Flag: R4**

Review Question: Look ahead in the medical record and indicate if any of the drugs are found.

Drug List 1: Absolute Contraindications: None

(significant drug-drug interactions, not necessarily in order of severity):

Drug List 2: Consider risk-benefit when:

1. Oral antidiabetic agents
2. Insulin
3. Long-term, high-dose corticosteroid therapy (≥1 month equivalent of average ≥20 mg of prednisone daily)

OLD MONITORING **Flag: R5**

Review Question: Indicate whether each monitoring action was done in the time specified.

Monitoring Actions:

1. All Patients:

Monitor:	Blood pressure	Rationale: The initial dose of an ACE inhibitor may cause a precipitous symptomatic fall in blood pressure. Occasionally, symptomatic hypotension may develop late in the course of therapy (DE, p. 488).
Time Frame:	Every 6 months	

2. All Patients:

Monitor:	Standing blood pressure	Rationale: The initial dose of an ACE inhibitor may cause a precipitous symptomatic fall in blood pressure. Occasionally, symptomatic hypotension may develop late in the course of therapy (DE, p. 488).
Time Frame:	Annually	

3. All Patients:

Monitor:	BUN or serum creatinine	Rationale: ACE inhibitors may cause acute renal failure or functional renal insufficiency (DE, p. 489). In addition, thiazide diuretics are usually ineffective when renal function is impaired and may cause a reversible elevation of BUN levels (DE, p. 692).
Time Frame:	Every 6 months	

4. All Patients:

Monitor:	Serum sodium and serum potassium	Rationale: Thiazides increase the excretion of potassium and sodium and may cause severe electrolyte disturbances. Serum potassium and sodium levels should be determined periodically and the lowest effective dose used (DE, p. 692).
Time Frame:	Every 6 months	

(cont'd)

ACE Inhibitor + Thiazide Diuretic (cont'd) **CODE: 11**

OLD MONITORING: (cont'd) **Flag: R5**

Review Question: Indicate whether each monitoring action was done in the time specified.

Monitoring Actions:

5. Patients on Lithium:

Monitor:	Serum lithium levels	Rationale: Patients taking lithium require frequent monitoring of serum lithium levels to avoid toxicity, as adverse reactions can occur with doses close to therapeutic levels. When electrolyte imbalance occurs (as with diuretic use), lithium is reabsorbed by the kidneys and may accumulate to toxic levels (DE, p. 279, 280).
Time Frame:	Every 3 months	

6. Patients with Diabetes:

Monitor:	Blood glucose	Rationale: Thiazides increase fasting blood glucose levels and decrease glucose tolerance during long-term therapy. Diabetics should have their glucose levels monitored more frequently than usual if on thiazide therapy (DE, p. 692).
Time Frame:	Every 3 months	

7. Patients on Long-term Steroids:

Monitor:	Serum potassium	Rationale: Corticosteroids may be associated with sodium retention and potassium depletion. When combined with thiazide diuretics, they enhance any hypokalemic effect (DE, p. 627, 691).
Time Frame:	Every 3 months	

8. Patients with Impaired Liver Function:

Monitor:	Serum potassium and serum sodium	Rationale: Hyponatremia is a common complication in patients with impaired liver function. All diuretics, and especially thiazide diuretics, should be used with caution in patients with chronic liver disease (DE, p. 693).
Time Frame:	Every 3 months	

ACE Inhibitor + Thiazide Diuretic (cont'd) **CODE: 11**

NEW MONITORING: **Flag: R5**

Review Question: Indicate whether each monitoring action was done in the time specified.

Monitoring Actions:

1. All Patients:

Monitor: Blood pressure
Time Frame: Within 1 month of start of therapy

Rationale: The initial dose of an ACE inhibitor may cause a precipitous symptomatic fall in blood pressure. Occasionally, symptomatic hypotension may develop late in the course of therapy (DE, p. 488).

2. All Patients:

Monitor: BUN or serum creatinine
Time Frame: Within 1 month of start of therapy

Rationale: ACE inhibitors may cause acute renal failure or functional renal insufficiency (DE, p. 489). In addition, thiazide diuretics are usually ineffective when renal function is impaired and may cause a reversible elevation of BUN levels (DE, p. 692).

3. All Patients:

Monitor: Serum sodium and serum potassium
Time Frame: Within 1 month of start of therapy

Rationale: Thiazides increase the excretion of potassium and sodium and may cause severe electrolyte disturbances. Serum potassium and sodium levels should be determined periodically and the lowest effective dose used (DE, p. 692).

4. All Patients:

Monitor: WBC and differential count
Time Frame: Within 3 months of start of therapy

Rationale: Neutropenia occurs rarely with ACE inhibitors, about 0.02% to 0.03% of the time. If detected early, neutropenia is reversible. However, fatal agranulocytosis has been reported with ACE inhibitor therapy (DE, p. 489).

(cont'd)

ACE Inhibitor + Thiazide Diuretic (cont'd) **CODE: 11**

NEW MONITORING: (cont'd) **Flag: R5**

Review Question: Indicate whether each monitoring action was done in the time specified.

Monitoring Actions:

5. Patients with Diabetes:

Monitor: Blood glucose
Time Frame: Within 3 months of start of therapy

Rationale: Thiazides increase fasting blood glucose levels and decrease glucose tolerance during long-term therapy. Diabetics should have their glucose levels monitored more frequently than usual if on thiazide therapy (DE, p. 692).

6. Patients on Lithium:

Monitor: Serum lithium levels
Time Frame: Within 3 months of start of therapy

Rationale: Patients taking lithium require frequent monitoring of serum lithium levels to avoid toxicity, as adverse reactions can occur with doses close to therapeutic levels. When electrolyte imbalance occurs (as with diuretic use), lithium is reabsorbed by the kidneys and may accumulate to toxic levels (DE, p. 279, 280).

7. Patients on Long-term Steroids:

Monitor: Serum potassium
Time Frame: Within 3 months of start of therapy

Rationale: Corticosteroids may be associated with sodium retention and potassium depletion. When combined with thiazide diuretics, they enhance any hypokalemic effect (DE, p. 627, 691).

8. Patients with Impaired Liver Function:

Monitor: Serum sodium and serum potassium
Time Frame: Within 3 months of start of therapy

Rationale: Hyponatremia is a common complication in patients with impaired liver function. All diuretics, and especially thiazide diuretics, should be used with caution in patients with chronic liver disease (DE, p. 693).

ANTIADRENERGIC ALPHA-BLOCKER + DIURETIC, THIAZIDE-TYPE

CODE: 12

INDICATIONS:

Flag: R2

Review Question: Indicate if any of the following conditions/diagnoses are in the medical record.

1. Hypertension: Only if stepped therapy has failed. (See p. 144.)

DIAGNOSIS CONTRAINDICATIONS:

Flag: R3

Review Question: Look ahead in the medical record and indicate if any of the conditions are found.

Contraindications List 1: Absolute Contraindications:

1. Severe renal impairment
   Defined as: BUN >50 mg/dL, or creatinine >2.5 mg/dL

2. Hypercalcemia
   Defined as: calcium >12 mg/dL

3. Hyperuricemia
   Defined as: serum uric acid >10 mg/dL

Contraindications List 2: Consider risk-benefit when:

4. Orthostatic hypotension

5. Gout

6. Hepatic dysfunction

7. Systemic lupus erythematosus

Antiadrenergic Alpha-blocker + Diuretic, Thiazide-type (cont'd) CODE: 12

DRUG CONTRAINDICATIONS: **Flag: R4**

Review Question: Look ahead in the medical record and indicate if any of the drugs are found.

Drug List 1: Absolute Contraindications: None

(significant drug-drug interactions, not necessarily in order of severity):

Drug List 2: Consider risk-benefit when:

1. Oral antidiabetic agents
2. Insulin
3. Long-term, high-dose corticosteroid therapy (≥1 month equivalent of average ≥20 mg of prednisone daily)

OLD MONITORING **Flag: R5**

Review Question: Indicate whether each monitoring action was done in the time specified.

Monitoring Actions:

1. All Patients:

Monitor: Blood pressure
Time Frame: Every 6 months

Rationale: Antiadrenergic alpha-blockers reduce both supine and standing blood pressures; however, the hypotensive effect is most pronounced when the patient is standing (DE, p. 509).

2. All Patients:

Monitor: Standing blood pressure
Time Frame: Annually

Rationale: Antiadrenergic alpha-blockers reduce both supine and standing blood pressures; however, the hypotensive effect is most pronounced when the patient is standing (DE, p. 509).

3. All Patients:

Monitor: BUN or creatinine
Time Frame: Every 6 months

Rationale: Thiazides are usually ineffective when renal function is impaired and may cause a reversible elevation of BUN levels (DE, p. 692).

4. All Patients:

Monitor: Serum potassium and serum sodium
Time Frame: Every 6 months

Rationale: Thiazides increase the excretion of potassium and sodium and may cause severe electrolyte disturbances. Levels should be determined periodically and the lowest effective dose used. Also, thiazides are usually ineffective when renal function is impaired and may cause a reversible elevation of BUN levels (DE, p. 692).

(cont'd)

Antiadrenergic Alpha-blocker + Diuretic, Thiazide-type (cont'd) **CODE: 12**

OLD MONITORING: (cont'd) **Flag: R5**

Review Question: Indicate whether each monitoring action was done in the time specified.

Monitoring Actions:

5. Patients on Lithium:

Monitor: Lithium levels
Time Frame: Every 3 months

Rationale: Patients taking lithium require frequent monitoring of serum lithium levels to avoid toxicity, as adverse reactions can occur with doses close to therapeutic levels. When electrolyte imbalance occurs (as with diuretic use), lithium is reabsorbed by the kidneys and may accumulate to toxic levels (DE, p. 279, 280).

6. Patients with CHF:

Monitor: Weight and lung exam
Time Frame: Every 6 months

Rationale: Fluid retention and edema are adverse effects of prazosin, which may worsen pre-existing CHF. Also, during long-term therapy, tolerance to the benefits of the drug develops in patients with CHF (DE, p. 509).

7. Patients with Diabetes:

Monitor: Blood glucose
Time Frame: Every 3 months

Rationale: Thiazides increase fasting blood glucose levels and decrease glucose tolerance during long-term therapy. Diabetics should have their glucose levels monitored more frequently than usual if on thiazide therapy (DE, p. 692).

8. Patients with Impaired Liver Function:

Monitor: Serum potassium and serum sodium
Time Frame: Every 3 months

Rationale: Hyponatremia is a common complication in patients with impaired liver function. All diuretics, and especially thiazide diuretics, should be used with caution in patients with chronic liver disease (DE, p. 693).

Antiadrenergic Alpha-blocker + Diuretic, Thiazide-type (cont'd)

CODE: 12

NEW MONITORING:

Flag: R5

Review Question: Indicate whether each monitoring action was done in the time specified.

Monitoring Actions:

1. All Patients:

Monitor: Orthostatic blood pressure
Time Frame: Within 1 month of start of therapy

Rationale: With alpha-blocking agents, severe orthostatic hypotension may occur at the beginning of treatment leading to collapse or loss of consciousness (DE, p. 509).

2. All Patients:

Monitor: BUN or creatinine
Time Frame: Within 1 month of start of therapy

Rationale: Thiazides are usually ineffective when renal function is impaired and may cause a reversible elevation of BUN levels (DE, p. 692).

3. All Patients:

Monitor: Serum potassium
Time Frame: Within 1 month of start of therapy

Rationale: Thiazides increase the excretion of potassium and sodium and may cause severe electrolyte disturbances. Levels should be determined periodically and the lowest effective dose used (DE, p. 692).

4. All Patients:

Monitor: Serum sodium
Time Frame: Within 1 month of start of therapy

Rationale: Thiazides increase the excretion of potassium and sodium and may cause severe electrolyte disturbances. Levels should be determined periodically and the lowest effective dose used (DE, p. 692).

(cont'd)

Antiadrenergic Alpha-blocker + Diuretic, Thiazide-type (cont'd) **CODE: 12**

NEW MONITORING: (cont'd) **Flag: R5**

Review Question: Indicate whether each monitoring action was done in the time specified.

Monitoring Actions:

5. Patients on Lithium:

Monitor: Lithium levels
Time Frame: Every 3 months

Rationale: Patients taking lithium require frequent monitoring of serum lithium levels to avoid toxicity, as adverse reactions can occur with doses close to therapeutic levels. When electrolyte imbalance occurs (as with diuretic use), lithium is reabsorbed by the kidneys and may accumulate to toxic levels (DE, p. 279, 280).

6. Patients with CHF:

Monitor: Weight and lung exam
Time Frame: Within 1 month of start of therapy

Rationale: Fluid retention and edema are adverse effects of prazosin, which may worsen pre-existing CHF. Also, during long-term therapy, tolerance to the benefits of the drug develops in patients with CHF (DE, p. 509).

7. Patients with Impaired Liver Function:

Monitor: Serum potassium and serum sodium
Time Frame: Every 3 months

Rationale: Hyponatremia is a common complication in patients with impaired liver function. All diuretics, and especially thiazide diuretics, should be used with caution in patients with chronic liver disease (DE, p. 693).

8. Patients with Angina or Diabetes:

Monitor: Educate patient about possible exacerbation of angina.
Time Frame: Within 1 month of start of therapy

Rationale: Patients should be made aware of and asked to report chest pain, a rare side effect of alpha-blockers. Also, diuretics, beta-blockers, and/or low-sodium diet may increase susceptibility to angina attacks (DE, p. 509).

Monitor: Blood glucose
Time Frame: Within 3 months of start of therapy

Thiazides increase fasting blood glucose levels and decrease glucose tolerance during long-term therapy. Diabetics should have their glucose levels monitored more frequently than usual if on thiazide therapy (DE, p. 692).

ANTIADRENERGIC BETA-BLOCKER + DIURETIC, THIAZIDE-TYPE CODE: 13

INDICATIONS: Flag: R2

Review Question: Indicate if any of the following conditions/diagnoses are in the medical record.

1. Hypertension: Only if stepped therapy has failed. (See p. 144.)

DIAGNOSIS CONTRAINDICATIONS: Flag: R3

Review Question: Look ahead in the medical record and indicate if any of the conditions are found.

Contraindications List 1: Absolute Contraindications:

1. Severe renal impairment
   Defined as: BUN >50 mg/dL, or creatinine >2.5 mg/dL

2. Hypercalcemia
   Defined as: calcium >12 mg/dL

3. Congestive heart failure

4. Heart block

5. Asthma

6. Emphysema or nonallergic bronchitis

Contraindications List 2: Consider risk-benefit when:

7. Mental depression

8. Raynaud's phenomenon

9. Intermittent claudication

10. Gout

11. If impaired hepatic function

12. Systemic lupus erythematosus

Antiadrenergic Beta-blocker + Diuretic, Thiazide-type (cont'd) CODE: 13

DRUG CONTRAINDICATIONS: **Flag: R4**

Review Question: Look ahead in the medical record and indicate if any of the drugs are found.

Drug List 1: Absolute Contraindications: None

(significant drug-drug interactions, not necessarily in order of severity):

Drug List 2: Consider risk-benefit when:

1. Oral antidiabetic agents
2. Insulin
3. Calcium channel blockers
4. Long-term, high-dose corticosteroid therapy (≥1 month equivalent of average ≥20 mg of prednisone daily)

OLD MONITORING: **Flag: R5**

Review Question: Indicate whether each monitoring action was done in the time specified.

Monitoring Actions:

1. All Patients:

   Monitor: Blood pressure
   Time Frame: Every 6 months

   Rationale: Beta-blocking drugs reduce heart rate, myocardial contractility, and cardiac output and may cause pronounced hypotension (DE, p. 471).

2. All Patients:

   Monitor: Standing blood pressure
   Time Frame: Annually

   Rationale: Beta-blocking drugs reduce heart rate, myocardial contractility, and cardiac output and may cause pronounced hypotension (DE, p. 471).

3. All Patients:

   Monitor: Serum sodium and serum potassium and BUN or serum creatinine
   Time Frame: Every 6 months

   Rationale: Thiazides increase the excretion of potassium and sodium and may cause severe electrolyte disturbances. Levels should be determined periodically and the lowest effective dose used. Also, thiazides are usually ineffective when renal function is impaired and may cause a reversible elevation of BUN levels (DE, p. 692).

4. All Patients:

   Monitor: Lung exam and pulse
   Time Frame: Annually

   Rationale: Beta-blockers may precipitate heart failure in patients with inadequate cardiac reserve. A periodic lung exam monitors for evidence of CHF. Beta-blockers also reduce heart rate and may precipitate pronounced bradycardia (DE, p. 470, 471).

(cont'd)

Antiadrenergic Beta-blocker + Diuretic, Thiazide-type (cont'd) CODE: 13

OLD MONITORING: (cont'd) Flag: R5

Review Question: Indicate whether each monitoring action was done in the time specified.

Monitoring Actions:

5. Patients with Impaired Liver Function:

Monitor: Serum sodium and serum potassium
Time Frame: Every 3 months

Rationale: Hyponatremia is a common complication in patients with impaired liver function. All diuretics, and especially thiazide diuretics, should be used with caution in patients with chronic liver disease (DE, p. 693).

6. Patients with Asthma or Emphysema or Depression:

Monitor: Lung exam
Time Frame: Annually

Rationale: Beta-blockers increase airway resistance and may precipitate an asthmatic attack in susceptible individuals. A periodic lung exam monitors for evidence of worsening respiratory status (DE, p. 509).

Monitor: Mental status
Time Frame: Annually

Common side effects of beta-blockers include fatigue and lethargy; depression and altered patterns of sleep are less common. In depressed patients, mental state should be monitored for evidence of worsening depression (DE, p. 473).

7. Patients with Diabetes:

Monitor: Blood glucose
Time Frame: Every 3 months

Rationale: Thiazides increase fasting blood glucose levels and decrease glucose tolerance during long-term therapy. Diabetics should have their glucose levels monitored more frequently than usual if on thiazide therapy (DE, p. 692).

8. Patients on Lithium:

Monitor: Serum lithium levels
Time Frame: Every 3 months

Rationale: Patients taking lithium require frequent monitoring of serum lithium levels to avoid toxicity, as adverse reactions can occur with doses close to therapeutic levels. When electrolyte imbalance occurs (as with diuretic use), lithium is reabsorbed by the kidneys and may accumulate to toxic levels (DE, p. 279, 280).

Antiadrenergic Beta-blocker + Diuretic, Thiazide-type (cont'd) **CODE: 13**

NEW MONITORING: **Flag: R5**

Review Question: Indicate whether each monitoring action was done in the time specified.

Monitoring Actions:

1. All Patients:

Monitor: Blood pressure
Time Frame: Within 1 month of start of therapy

Rationale: Beta-blocking drugs reduce heart rate, myocardial contractility, and cardiac output and may cause pronounced hypotension, which can be monitored with regular standing blood pressure measurements (DE, p. 471).

2. All Patients:

Monitor: BUN or serum creatinine
Time Frame: Within 1 month of start of therapy

Rationale: Thiazides are usually ineffective when renal function is impaired and may cause a reversible elevation of BUN levels (DE, p. 692).

3. All Patients:

Monitor: Serum potassium and serum sodium
Time Frame: Within 1 month of start of therapy

Rationale: Thiazides increase the excretion of potassium and sodium and may cause severe electrolyte disturbances. Levels should be determined periodically and the lowest effective dose used (DE, p. 692).

4. All Patients:

Monitor: Lung exam and pulse
Time Frame: Within 3 months of start of therapy

Rationale: Beta-blockers may precipitate heart failure in patients with inadequate cardiac reserve. A periodic lung exam monitors for evidence of CHF. Beta-blockers also reduce heart rate and may precipitate pronounced bradycardia (DE, p. 470, 471).

(cont'd)

Antiadrenergic Beta-blocker + Diuretic, Thiazide-type (cont'd) **CODE: 13**

NEW MONITORING: (cont'd) **Flag: R5**

Review Question: Indicate whether each monitoring action was done in the time specified.

Monitoring Actions:

5. Patients with Impaired Liver Function:

Monitor: Serum potassium and serum sodium Time Frame: Within 3 months of start of therapy	Rationale: Hyponatremia is a common complication in patients with impaired liver function. All diuretics, and especially thiazide diuretics, should be used with caution in patients with chronic liver disease (DE, p. 693).

6. Patients on Lithium:

Monitor: Serum lithium levels Time Frame: Within 3 months of start of therapy	Rationale: Patients taking lithium require frequent monitoring of serum lithium levels to avoid toxicity, as adverse reactions can occur with doses close to therapeutic levels. When electrolyte imbalance occurs (as with diuretic use), lithium is reabsorbed by the kidneys and may accumulate to toxic levels (DE, p. 279, 280).

7. Patients with Depression or Diabetes:

Monitor: Mental state Time Frame: Within 3 months of start of therapy	Rationale: Common side effects of beta-blockers include fatigue and lethargy; depression and altered patterns of sleep are less common. In depressed patients, mental state should be monitored for evidence of worsening depression (DE, p. 473).
Monitor: Blood glucose Time Frame: Within 3 months of start of therapy	Thiazides increase fasting blood glucose levels and decrease glucose tolerance during long-term therapy. Diabetics should have their glucose levels monitored more frequently than usual if on thiazide therapy (DE, p. 692).

8. Patients with Asthma or Emphysema:

Monitor: Lung exam for evidence of worsening failure Time Frame: Within 3 months of start of therapy	Rationale: Beta-blockers increase airway resistance and may precipitate an asthmatic attack in susceptible individuals. A periodic lung exam monitors for evidence of worsening respiratory status (DE, p. 509).

ANTIADRENERGIC, CENTRALLY ACTING + DIURETIC, THIAZIDE-TYPE

CODE: 14

INDICATIONS:

Flag: R2

Review Question: Indicate if any of the following conditions/diagnoses are in the medical record.

1. Hypertension: Only if stepped therapy has failed. (See p. 144.)

DIAGNOSIS CONTRAINDICATIONS:

Flag: R3

Review Question: Look ahead in the medical record and indicate if any of the conditions are found.

Contraindications List 1: Absolute Contraindications:

1. Anuria

2. Hepatic disease (active) - methyldopa

3. Severe renal impairment
   Defined as: BUN >50 mg/dL, or creatinine >2.5 mg/dL

4. Hypercalcemia
   Defined as: calcium >12 mg/dL

Contraindications List 2: Consider risk-benefit when:

5. Mental depression - if taking reserpine, guanfacine

6. Gout

7. If impaired hepatic function

8. Systemic lupus erythematosus

Antiadrenergic, Centrally Acting + Diuretic, Thiazide-type (cont'd) CODE: 14

DRUG CONTRAINDICATIONS: Flag: R4

Review Question: Look ahead in the medical record and indicate if any of the drugs are found.

Drug List 1: Absolute Contraindications: None

Drug List 2: Consider risk-benefit when:

1. Oral antidiabetic agents
2. Insulin
3. Tricyclic antidepressants - clonidine
4. Monoamine oxidase inhibitors - reserpine
5. Long-term, high-dose corticosteroid therapy (≥1 month equivalent of average ≥20 mg of prednisone daily)

OLD MONITORING: Flag: R5

Review Question: Indicate whether each monitoring action was done in the time specified.

Monitoring Actions:

1. All Patients:

   Monitor: Blood pressure
   Time Frame: Every 6 months

   Rationale: Hypotension is a potential adverse effect of centrally acting antiadrenergic drugs (DE, p. 512).

2. All Patients:

   Monitor: Standing blood pressure
   Time Frame: Annually

   Rationale: Hypotension is a potential adverse effect of centrally acting antiadrenergic drugs (DE, p. 512).

3. All Patients:

   Monitor: Serum sodium and serum potassium and BUN or serum creatinine
   Time Frame: Within 1 month of start of therapy

   Rationale: Thiazides increase the excretion of potassium and sodium and may cause severe electrolyte disturbances. Levels should be determined periodically and the lowest effective dose used. Also, thiazides are usually ineffective when renal function is impaired and may cause a reversible elevation of BUN levels (DE, p. 692).

4. All Patients:

   Monitor: Mental status
   Time Frame: Every 6 months

   Rationale: Antiadrenergic, centrally acting drugs are central nervous system depressants and may cause a decline in mental acuity and/or mental depression. With rauwolfia alkaloids taken in high doses, mental depression is common (DE, p. 514).

(cont'd)

Antiadrenergic, Centrally Acting + Diuretic, Thiazide-type (cont'd) **CODE: 14**

OLD MONITORING: (cont'd)

Review Question: Indicate whether each monitoring action was done in the time specified.

Monitoring Actions:

5. Patients on Methyldopa:

Monitor: CBC and hematocrit
Time Frame: Annually

Rationale: Leukopenia, thrombocytopenia, and hemolytic anemia may occur with methyldopa. While these are uncommon reactions, they are reversible (DE, p. 514).

6. Patients on Lithium:

Monitor: Serum lithium levels
Time Frame: Every 3 months

Rationale: Patients taking lithium require frequent monitoring of serum lithium levels to avoid toxicity, as adverse reactions can occur with doses close to therapeutic levels. When electrolyte imbalance occurs (as with diuretic use), lithium is reabsorbed by the kidneys and may accumulate to toxic levels (DE, p. 279, 280).

7. Patients on Methyldopa:

Monitor: SGOT and SGPT
Time Frame: Annually

Rationale: Methyldopa may induce hepatitis during the initial weeks of treatment; in a few cases fatal hepatic necrosis may occur (DE, p. 514).

8. Patients with Impaired Liver Function or Diabetes:

Monitor: Serum sodium and serum potassium
Time Frame: Every 3 months

Rationale: Hyponatremia is a common complication in patients with impaired liver function. All diuretics, and especially thiazide diuretics, should be used with caution with chronic liver disease (DE, p. 693)

Monitor: Blood glucose
Time Frame: Every 3 months

Thiazides increase fasting blood glucose levels and decrease glucose tolerance during long-term therapy. Diabetics should have glucose levels monitored more frequently than usual if on thiazide therapy (DE,p.692).

Antiadrenergic, Centrally Acting + Diuretic, Thiazide-type (cont'd) CODE: 14

NEW MONITORING: **Flag: R5**

Review Question: Indicate whether each monitoring action was done in the time specified.

Monitoring Actions:

1. All Patients:

Monitor: Blood pressure
Time Frame: Within 1 month of start of therapy

Rationale: Hypotension is a potential adverse effect of centrally acting antiadrenergic drugs (DE, p. 512).

2. All Patients:

Monitor: BUN or serum creatinine
Time Frame: Within 1 month of start of therapy

Rationale: Thiazides are usually ineffective when renal function is impaired and may cause a reversible elevation of BUN levels (DE, p. 692).

3. All Patients:

Monitor: Serum sodium and serum potassium
Time Frame: Within 1 month of start of therapy

Rationale: Thiazides increase the excretion of potassium and sodium and may cause severe electrolyte disturbances. Levels should be determined periodically and the lowest effective dose used (DE, p. 692).

4. All Patients:

Monitor: Mental status
Time Frame: Within 3 months of start of therapy

Rationale: Antiadrenergic-centrally acting drugs are central nervous system depressants and may cause a decline in mental acuity and/or mental depression. With rauwolfia alkaloids taken in high doses, mental depression is common (DE, p. 514). (cont'd)

Antiadrenergic, Centrally Acting + Diuretic, Thiazide-type (cont'd) **CODE: 14**

NEW MONITORING: (cont'd) **Flag: R5**

Review Question: Indicate whether each monitoring action was done in the time specified.

Monitoring Actions:

5. Patients on Methyldopa:

Monitor:	Check CBC, hematocrit, SGOT, and SGPT	Rationale: Leukopenia, thrombocytopenia, and hemolytic anemia may occur with methyldopa. While these are uncommon reactions, they are reversible (DE, p. 514). Methyldopa may induce hepatitis during the initial weeks of treatment; in a few cases fatal hepatic necrosis may occur (DE, p. 514).
Time Frame:	Within 3 months of start of therapy	

6. Patients with Impaired Liver Function:

Monitor:	Serum sodium and serum potassium	Rationale: Hyponatremia is a common complication in patients with impaired liver function. All diuretics, and especially thiazide diuretics, should be used with caution in patients with chronic liver disease (DE, p. 693).
Time Frame:	Within 3 months of start of therapy	

7. Patients on Lithium:

Monitor:	Serum lithium levels	Rationale: Patients taking lithium require frequent monitoring of serum lithium levels to avoid toxicity, as adverse reactions can occur with doses close to therapeutic levels. When electrolyte imbalance occurs (as with diuretic use), lithium is reabsorbed by the kidneys and may accumulate to toxic levels (DE, p. 279, 280).
Time Frame:	Within 3 months of start of therapy	

8. Patients with Diabetes:

Monitor:	Blood glucose	Rationale: Thiazides increase fasting blood glucose levels and decrease glucose tolerance during long-term therapy. Diabetics should have their glucose levels monitored more frequently than usual if on thiazide therapy (DE, p. 692).
Time Frame:	Within 3 months of start of therapy	

CENTRALLY ACTING ANTIADRENERGIC + THIAZIDE-TYPE DIURETIC + DIRECT-ACTING VASODILATOR

CODE: 15

INDICATIONS: Flag: R2

Review Question: Indicate if any of the following conditions/diagnoses are in the medical record.

1. Hypertension only if all other antihypertensive regimens have failed.

DIAGNOSIS CONTRAINDICATIONS: Flag: R3

Review Question: Look ahead in the medical record and indicate if any of the conditions are found.

Contraindications List 1: Absolute Contraindications:

1. Severe renal impairment
   Defined as: BUN >50 mg/dL, or creatinine >2.5 mg/dL

2. Hypercalcemia
   Defined as: calcium >12 mg/dL

3. Hyperuricemia
   Defined as: serum uric acid >10 mg/dL

Contraindications List 2: Consider risk-benefit when:

4. Mental depression - if taking reserpine, guanfacine

5. Coronary artery disease

6. Mitral valve disease

7. Gout

8. If impaired hepatic function

9. Systemic lupus erythematosus

Centrally Acting Antiadrenergic + Thiazide-type Diuretic + Direct-acting Vasodilator (cont'd) CODE: 15

DRUG CONTRAINDICATIONS: Flag: R4

Review Question: Look ahead in the medical record and indicate if any of the drugs are found.

Drug List 1: Absolute Contraindications: None

Drug List 2: Consider risk-benefit when:

1. Oral antidiabetic agents
2. Insulin
3. Tricyclic antidepressants - clonidine
4. Monoamine oxidase inhibitors - reserpine
5. Long-term, high-dose corticosteroid therapy (≥1 month equivalent of average ≥20 mg of prednisone daily)

OLD MONITORING: Flag: R5

Review Question: Indicate whether each monitoring action was done in the time specified.

Monitoring Actions:

1. All Patients:

   Monitor: Blood pressure
   Time Frame: Every 6 months
   Rationale: Hypotension is a potential adverse effect of centrally acting antiadrenergic drugs (DE, p. 512). With direct acting vasodilator, severe orthostatic effects have been reported (DE, p. 518).

2. All Patients:

   Monitor: Standing blood pressure
   Time Frame: Annually
   Rationale: Hypotension is a potential adverse effect of centrally acting antiadrenergic drugs (DE, p. 512). With direct acting vasodilator, severe orthostatic effects have been reported (DE, p. 518).

3. All Patients:

   Monitor: BUN or serum creatinine
   Time Frame: Every 6 months
   Rationale: Thiazides are usually ineffective when renal function is impaired and may cause a reversible elevation of BUN levels (DE, p. 692).

4. All Patients:

   Monitor: Serum potassium and serum sodium
   Time Frame: Every 6 months
   Rationale: Thiazides increase the excretion of potassium and sodium and may cause severe electrolyte disturbances. Levels should be determined periodically and the lowest effective dose used (DE, p. 692).

(cont'd)

Centrally Acting Antiadrenergic + Thiazide-type Diuretic + Direct-Acting Vasodilator (cont'd) CODE: 15

OLD MONITORING: (cont'd) Flag: R5

Review Question: Indicate whether each monitoring action was done in the time specified.

Monitoring Actions:

5. All Patients:

Monitor: Mental status (mood)
Time Frame: Annually

Rationale: Antiadrenergic, centrally acting drugs are central nervous system depressants and may cause a decline in mental acuity and/or mental depression. With rauwolfia alkaloids taken in high doses, mental depression is common (DE, p. 514).

6. Patients on Lithium:

Monitor: Serum lithium levels
Time Frame: Every 3 months

Rationale: Patients taking lithium require frequent monitoring of serum lithium levels to avoid toxicity, as adverse reactions can occur with doses close to therapeutic levels. When electrolyte imbalance occurs (as with diuretic use), lithium is reabsorbed by the kidneys and may accumulate to toxic levels (DE, p. 279, 280).

7. Patients with Impaired Liver Function or Diabetes:

Monitor: Serum sodium and serum potassium
Time Frame: Every 3 months

Rationale: Hyponatremia is a common complication in patients with impaired liver function. All diuretics, and especially thiazide diuretics, should be used with caution in patients with chronic liver disease (DE, p. 693).

Monitor: Blood glucose
Time Frame: Every 3 months

Rationale: Thiazides increase fasting blood glucose levels and decrease glucose tolerance during long-term therapy. Diabetics should have their glucose levels monitored more frequently than usual if on thiazide therapy (DE, p. 692).

8. Patients with CHF:

Monitor: Weight and lung exam
Time Frame: Every 6 months

Rationale: Fluid retention and edema are common adverse effects of vasodilator which may worsen pre-existing congestive heart failure (DE, p. 518).

Centrally Acting Antiadrenergic + Thiazide-type Diuretic + Direct-acting Vasodilator (cont'd) **CODE: 15**

NEW MONITORING: **Flag: R5**

Review Question: Indicate whether each monitoring action was done in the time specified.

Monitoring Actions:

1. All Patients:

Monitor:	Blood pressure	Rationale: Hypotension is a potential adverse effect of centrally acting antiadrenergic drugs (DE, p. 512). With direct acting vasodilator, severe orthostatic effects have been reported (DE, p. 518).
Time Frame:	Within 1 month of start of therapy	

2. All Patients:

Monitor:	BUN or serum creatinine	Rationale: Thiazides are usually ineffective when renal function is impaired and may cause a reversible elevation of BUN levels (DE, p. 692).
Time Frame:	Within 1 month of start of therapy	

3. All Patients:

Monitor:	Mental status	Rationale: Antiadrenergic, centrally acting drugs are central nervous system depressants and may cause a decline in mental acuity and/or mental depression. With rauwolfia alkaloids taken in high doses, mental depression is common (DE, p. 514).
Time Frame:	Within 3 months of start of therapy	

4. All Patients:

Monitor:	Serum potassium	Rationale: Thiazides increase the excretion of potassium and sodium and may cause severe electrolyte disturbances. Levels should be determined periodically and the lowest effective dose used (DE, p. 692).
Time Frame:	Within 1 month of start of therapy	

(cont'd)

Centrally Acting Antiadrenergic + Thiazide-type Diuretic + Direct-acting Vasodilator (cont'd) CODE: 15

NEW MONITORING: (cont'd) Flag: R5

Review Question: Indicate whether each monitoring action was done in the time specified.

Monitoring Actions:

5. All Patients:

Monitor: Serum sodium
Time Frame: Within 1 month of start of therapy

Rationale: Thiazides increase the excretion of potassium and sodium and may cause severe electrolyte disturbances. Levels should be determined periodically and the lowest effective dose used (DE, p. 692).

6. Patients on Lithium:

Monitor: Serum lithium levels
Time Frame: Within 3 months of start of therapy

Rationale: Patients taking lithium require frequent monitoring of serum lithium levels to avoid toxicity, as adverse reactions can occur with doses close to therapeutic levels. When electrolyte imbalance occurs (as with diuretic use), lithium is reabsorbed by the kidneys and may accumulate to toxic levels (DE, p. 279, 280).

7. Patients with Impaired Liver Function:

Monitor: Serum potassium and serum sodium
Time Frame: Within 3 months of start of therapy

Rationale: Hyponatremia is a common complication in patients with impaired liver function. All diuretics, and especially thiazide diuretics, should be used with caution in patients with chronic liver disease (DE, p. 693).

8. Patients with CHF, Angina, or Diabetes:

Monitor: Weight and lung exam
Time Frame: Within 1 month of start of therapy

Rationale: Fluid retention and edema are common adverse effects of vasodilator which may worsen pre-existing congestive heart failure (DE, p. 518).

Monitor: Educate patient about possible exacerbation of angina
Time Frame: Within 1 month

Rationale: Vasodilator increases heart rate and cardiac output and may precipitate myocardial ischemia in patients with coronary artery disease (DE, p. 518).

Monitor: Blood glucose
Time Frame: Within 3 months of start of therapy

Rationale: Thiazides increase fasting blood glucose levels and decrease glucose tolerance during long-term therapy. Diabetics should have their glucose levels monitored more frequently than usual if on thiazide therapy (DE, p. 692).

CENTRALLY ACTING ANTIADRENERGIC + DIRECT-ACTING VASODILATOR CODE: 16

INDICATIONS: Flag: R2

Review Question: Indicate if any of the following conditions/diagnoses are in the medical record.

1. Hypertension: Only if all other antihypertensive regimens have failed.

DIAGNOSIS CONTRAINDICATIONS: Flag: R3

Review Question: Look ahead in the medical record and indicate if any of the conditions are found.

Contraindications List 1: Absolute Contraindications: None

Contraindications List 2: Consider risk-benefit when:

1. Mental depression
2. Coronary artery disease
3. Mitral valve disease

DRUG CONTRAINDICATIONS: Flag: R4

Review Question: Look ahead in the medical record and indicate if any of the drugs are found.

Drug List 1: Absolute Contraindications:

1. Monoamine oxidase inhibitors

Drug List 2: Consider risk-benefit when: None

Centrally Acting Antiadrenergic + Direct-acting Vasodilator (cont'd) CODE: 16

OLD MONITORING: Flag: R5

Review Question: Indicate whether each monitoring action was done in the time specified.

Monitoring Actions:

1. All Patients:

Monitor:	Blood pressure	Rationale: Hypotension is a potential adverse effect of centrally acting antiadrenergic drugs (DE, p. 512). With direct-acting vasodilator, severe orthostatic effects have been reported (DE, p. 518).
Time Frame:	Every 6 months	

2. All Patients:

Monitor:	Standing blood pressure	Rationale: Hypotension is a potential adverse effect of centrally acting antiadrenergic drugs (DE, p. 512). With direct-acting vasodilator, severe orthostatic effects have been reported (DE, p. 518).
Time Frame:	Annually	

3. All Patients:

Monitor:	Mental status (mood)	Rationale: Antiadrenergic, centrally acting drugs are central nervous system depressants and may cause a decline in mental acuity and/or mental depression. With rauwolfia alkaloids taken in high doses, mental depression is common (DE, p. 514).
Time Frame:	Annually	

4. Patients with CHF:

Monitor:	Weight and lung exam	Rationale: Fluid retention and edema are common adverse effects of vasodilator which may worsen pre-existing congestive heart failure (DE, p. 518).
Time Frame:	Every 6 months	

5. Patients on ≥300 mg daily of hydralazine and develop symptoms of arthralgia, fever, chest pain or continued malaise:

Monitor:	Antinuclear antibody titer, CBC	Rationale: Hydralazine may produce an acute rheumatoid syndrome simulating systemic lupus erythematosus with a positive antinuclear antibody test. These effects are generally reversible when the drug is withdrawn (DE, p. 518).
Time Frame:	Every 6 months	

Centrally Acting Antiadrenergic + Direct-acting Vasodilator (cont'd) CODE: 16

NEW MONITORING: **Flag: R5**

Review Question: Indicate whether each monitoring action was done in the time specified.

Monitoring Actions:

1. All Patients:

   Monitor: Blood pressure
   Time Frame: Within 1 month of start of therapy

   Rationale: Hypotension is a potential adverse effect of centrally acting antiadrenergic drugs (DE, p. 512). With direct-acting vasodilator, severe orthostatic effects have been reported (DE, p. 518).

2. All Patients:

   Monitor: Mental status
   Time Frame: Within 3 months of start of therapy

   Rationale: Antiadrenergic, centrally acting drugs are central nervous system depressants and may cause a decline in mental acuity and/or mental depression. With rauwolfia alkaloids taken in high doses, mental depression is common (DE, p. 514).

3. Patients on ≥300 mg daily of hydralazine and develop symptoms of arthralgia, fever, chest pain or continued malaise:

   Monitor: Antinuclear antibody titer, CBC
   Time Frame: Within 6 months of start of therapy

   Rationale: Hydralazine may produce an acute rheumatoid syndrome simulating systemic lupus erythematosus with a positive antinuclear antibody test. These effects are generally reversible when the drug is withdrawn (DE, p. 518).

4. Patients with CHF:

   Monitor: Weight and lung exam
   Time Frame: Within 1 month of start of therapy

   Rationale: Fluid retention and edema are common adverse effects of vasodilator which may worsen pre-existing congestive heart failure (DE, p. 518).

5. Patients with Angina:

   Monitor: Educate patient about possible exacerbation of angina
   Time Frame: Within 1 month of start of therapy

   Rationale: Vasodilator increases heart rate and cardiac output and may precipitate myocardial ischemia in patients with coronary artery disease (DE, p. 518).

DIRECT-ACTING VASODILATOR + DIURETIC, THIAZIDE-TYPE

CODE: 17

INDICATIONS: Flag: R2

Review Question: Indicate if any of the following conditions/diagnoses are in the medical record.

1. Hypertension: Only if stepped therapy has failed. (See p. 144.)

DIAGNOSIS CONTRAINDICATIONS: Flag: R3

Review Question: Look ahead in the medical record and indicate if any of the conditions are found.

Contraindications List 1: Absolute Contraindications:

1. Anuria or severe renal impairment
   Defined as: BUN >50 mg/dL or creatinine >2.5 mg/dL
2. Hypercalcemia
   Defined as: calcium >12 mg/dL
3. Coronary artery disease
4. Mitral valve disease
5. Gout
6. If impaired hepatic function
7. Systemic lupus erythematosus

Contraindications List 2: Consider risk-benefit when: None

DRUG CONTRAINDICATIONS: Flag: R4

Review Question: Look ahead in the medical record and indicate if any of the drugs are found.

Drug List 1: Absolute Contraindications: None

Drug List 2: Consider risk-benefit when:

1. Oral antidiabetic agents
2. Insulin
3. Long-term, high-dose corticosteroid therapy (≥1 month equivalent of average ≥20 mg of prednisone daily)

Direct-acting Vasodilator + Diuretic, Thiazide-type (cont'd) **CODE: 17**

OLD MONITORING: **Flag: r5**

Review Question: Indicate whether each monitoring action was done in the time specified.

Monitoring Actions:

1. All Patients:

Monitor: Blood pressure
Time Frame: Every 6 months

Rationale: Severe orthostatic effects have been reported with vasodilator therapy (DE, p. 518).

2. All Patients:

Monitor: Standing blood pressure
Time Frame: Annually

Rationale: Severe orthostatic effects have been reported with vasodilator therapy (DE, p. 518).

3. All Patients:

Monitor: Serum sodium and serum potassium and BUN or serum creatinine
Time Frame: Every 6 months

Rationale: Thiazides increase the excretion of potassium and sodium and may cause severe electrolyte disturbances. Levels should be determined periodically and the lowest effective dose used. Also, thiazides are usually ineffective when renal function is impaired and may cause a reversible elevation of BUN levels (DE, p. 692).

4. Patients with Impaired Liver Function:

Monitor: Serum sodium and serum potassium
Time Frame: Every 3 months

Rationale: Thiazides increase the excretion of potassium and sodium and may cause severe electrolyte disturbances. Levels should be determined periodically and the lowest effective dose used (DE, p. 692).

5. Patients with Diabetes:

Monitor: Blood glucose
Time Frame: Every 3 months

Rationale: Thiazides increase fasting blood glucose levels and decrease glucose tolerance during long-term therapy. Diabetics should have their glucose levels monitored more frequently than usual if on thiazide therapy (DE, p. 692).

(cont'd)

Direct-acting Vasodilator + Diuretic, Thiazide-type (cont'd) CODE: 17

OLD MONITORING: (cont'd) **Flag: R5**

Review Question: Indicate whether each monitoring action was done in the time specified.

Monitoring Actions:

6. Patients with CHF:

Monitor: Weight and lung exam
Time Frame: Every 6 months

Rationale: Fluid retention and edema are common adverse effects of vasodilator which may worsen pre-existing congestive heart failure (DE, p. 518).

7. Patients on Lithium:

Monitor: Serum lithium levels
Time Frame: Every 3 months

Rationale: Patients taking lithium require frequent monitoring of serum lithium levels to avoid toxicity, as adverse reactions can occur with doses close to therapeutic levels. When electrolyte imbalance occurs (as with diuretic use), lithium is reabsorbed by the kidneys and may accumulate to toxic levels (DE, p. 279, 280).

8. Patients on >300 mg hydralazine and develop symptoms of arthralgia, fever, chest pain, or malaise:

Monitor: ANA and CBC
Time Frame: Every 6 months

Rationale: Hydralazine may produce an acute rheumatoid syndrome simulating systemic lupus erythematosus with a positive antinuclear test. These effects are generally reversible when the drug is withdrawn (DE, p. 518).

Direct-acting Vasodilator + Diuretic, Thiazide-type (cont'd) **CODE: 17**

NEW MONITORING: **Flag: R5**

Review Question: Indicate whether each monitoring action was done in the time specified.

Monitoring Actions:

1. All Patients:

   Monitor: Blood pressure
   Time Frame: Within 1 month of start of therapy

   Rationale: Severe orthostatic effects have been reported with vasodilator therapy (DE, p. 518).

2. All Patients:

   Monitor: BUN or serum creatinine
   Time Frame: Within 1 month of start of therapy

   Rationale: Thiazides are usually ineffective when renal function is impaired and may cause a reversible elevation of BUN levels (DE, p. 692).

3. All Patients:

   Monitor: Serum sodium and serum potassium
   Time Frame: Within 1 month of start of therapy

   Rationale: Thiazides increase the excretion of potassium and sodium and may cause severe electrolyte disturbances. Levels should be determined periodically and the lowest effective dose used. Also, thiazides are usually ineffective when renal function is impaired and may cause a reversible elevation of BUN levels (DE, p. 692).

4. Patients with Impaired Liver Function:

   Monitor: Serum sodium and serum potassium
   Time Frame: Within 3 months of start of therapy

   Rationale: Thiazides increase the excretion of potassium and sodium and may cause severe electrolyte disturbances. Levels should be determined periodically and the lowest effective dose used (DE, p. 692).

5. Patients on >300 mg hydralazine and develop symptoms of arthralgia, fever, chest pain, or malaise:

   Monitor: ANA and CBC
   Time Frame: Within 6 months of start of therapy

   Rationale: Hydralazine may produce an acute rheumatoid syndrome simulating systemic lupus erythematosus with a positive antinuclear test. These effects are generally reversible when the drug is withdrawn (DE, p. 518).

(cont'd)

Direct-acting Vasodilator + Diuretic, Thiazide-type (cont'd) CODE: 17

NEW MONITORING: (cont'd) Flag: R5

Review Question: Indicate whether each monitoring action was done in the time specified.

Monitoring Actions:

6. Patients with CHF:

Monitor: Weight and lung exam
Time Frame: Within 1 month of start of therapy

Rationale: Fluid retention and edema are common adverse effects of vasodilator which may worsen pre-existing congestive heart failure (DE, p. 518).

7. Patients with Angina or Diabetes:

Monitor: Educate about possible exacerbation of angina
Time Frame: Within 3 months of start of therapy

Rationale: Vasodilator increases heart rate and cardiac output and may precipitate myocardial ischemia in patients with CHF (DE, p. 518).

Monitor: Blood glucose
Time Frame: Within 3 months of start of therapy

Rationale: Thiazides increase fasting blood glucose levels and decrease glucose tolerance during long-term therapy. Diabetics should have their glucose levels monitored more frequently than usual if on thiazide therapy (DE, p. 692).

8. Patients on Lithium:

Monitor: Serum lithium levels
Time Frame: Within 3 months of start of therapy

Rationale: Patients taking lithium require frequent monitoring of serum lithium levels to avoid toxicity, as adverse reactions can occur with doses close to therapeutic levels. When electrolyte imbalance occurs (as with diuretic use), lithium is reabsorbed by the kidneys and may accumulate to toxic levels (DE, p. 279, 280).

DIURETIC, THIAZIDE-TYPE + POTASSIUM-SPARING TYPE

CODE: 18

INDICATIONS:

Flag: R2

Review Question: **Indicate if any of the following conditions/diagnoses are in the medical record.**

1. Edema or pulmonary edema
2. Hypertension only if Step 1 drug therapy has failed (see diagram, p. 10)
3. Diabetes insipidus
4. Renal calculi (calcium-containing)
5. Congestive heart failure

DIAGNOSIS CONTRAINDICATIONS:

Flag: R3

Review Question: Look ahead in the medical record and indicate if any of the conditions are found.

Contraindications List 1: Absolute Contraindications:

1. Severe renal impairment
   Defined as: BUN >50 mg/dL, or creatinine >2.5 mg/dL

Contraindications List 2: Consider risk-benefit when:

2. Hypercalcemia
   Defined as: calcium >12 mg/dL
3. Hyperkalemia
   Defined as: serum potassium >5.7 meq/L
4. Gout
5. If impaired hepatic function
6. Systemic lupus erythematosus

Diuretic, Thiazide-type + Potassium-sparing Type (cont'd) CODE: 18

DRUG CONTRAINDICATIONS: Flag: R4

Review Question: Look ahead in the medical record and indicate if any of the drugs are found.

Drug List 1: Absolute Contraindications:

1. Oral potassium supplements
2. ACE inhibitors

Drug List 2: Consider risk-benefit when:

3. Oral antidiabetic agents
4. Insulin
5. Long-term, high-dose corticosteroid therapy (≥1 month equivalent of average ≥20 mg of prednisone daily)

OLD MONITORING: Flag: R5

Review Question: Indicate whether each monitoring action was done in the time specified.

Monitoring Actions:

1. All Patients:

   Monitor: Blood pressure
   Time Frame: Every 6 months

   Rationale: Thiazides may cause hypotension (DE, p. 692).

2. All Patients:

   Monitor: Standing blood pressure
   Time Frame: Annually

   Rationale: Thiazides may cause hypotension (DE, p. 692).

3. All Patients:

   Monitor: BUN or serum creatinine
   Time Frame: Every 6 months

   Rationale: Both potassium-sparing and thiazide diuretics may increase BUN levels (DE, p. 692, 699). In addition, thiazide diuretics are usually ineffective when renal function is impaired (DE, p. 692).

(cont'd)

Diuretic, Thiazide-type + Potassium-sparing type (cont'd) **CODE: 18**

OLD MONITORING: (cont'd) **Flag: R5**

Review Question: Indicate whether each monitoring action was done in the time specified.

Monitoring Actions:

4. All Patients:

Monitor: Serum potassium and serum sodium
Time Frame: Every 6 months

Rationale: While potassium-sparing diuretics conserve potassium (hyperkalemia may result), thiazides increase the excretion of potassium. Potassium should be monitored to detect any chemical imbalances that may arise as a result of the therapy (DE, p.692, 699).

Rationale: Both potassium-sparing and thiazide diuretics promote sodium excretion. Although hyponatremia is rare with either drug alone, the combination of the two increases the risk of hyponatremia (DE, p. 692, 699).

5. Patients receiving lithium:

Monitor: Serum lithium levels
Time Frame: Every 3 months

Rationale: Patients taking lithium require frequent monitoring of serum lithium levels to avoid toxicity, as adverse reactions can occur with doses close to therapeutic levels. When electrolyte imbalance occurs (as with diuretic use), lithium is reabsorbed by the kidneys and may accumulate to toxic levels (DE, p. 279, 280).

6. Patients with diabetes:

Monitor: Blood glucose
Time Frame: Every 3 months

Rationale: Thiazides increase fasting blood glucose levels and decrease glucose tolerance during long-term therapy. Diabetics should have their glucose levels monitored more frequently than usual if on thiazide therapy (DE, p. 692).

7. Patients on corticosteroids:

Monitor: Serum potassium
Time Frame: Every 3 months

Rationale: Corticosteroids may be associated with sodium retention and potassium depletion. When combined with thiazide diuretics, they enhance any hypokalemic effect (DE, p. 627, 691).

8. Patients with impaired liver function:

Monitor: Serum potassium and serum sodium
Time Frame: Every 3 months

Rationale: Hyponatremia is a common complication in patients with impaired liver function. All diuretics, and especially thiazide diuretics, should be used with caution in patients with chronic liver disease (DE, p. 693).

Diuretic, Thiazide-type + Potassium-sparing type (cont'd) CODE: 18

NEW MONITORING: Flag: R5

Review Question: Indicate whether each monitoring action was done in the time specified.

Monitoring Actions:

1. All Patients:

Monitor:	Blood pressure	Rationale: Thiazides may cause hypotension (DE, p. 692).
Time Frame:	Within 1 month of start of therapy	

2. All Patients:

Monitor:	BUN or serum creatinine	Rationale: Both potassium-sparing and thiazide diuretics may increase BUN levels (DE, p. 692, 699). In addition, thiazide diuretics are usually ineffective when renal function is impaired (DE, p. 692).
Time Frame:	Within 1 month of start of therapy	

3. All Patients:

Monitor:	Serum potassium	Rationale: While potassium-sparing diuretics conserve potassium (hyperkalemia may result), thiazides increase the excretion of potassium. Potassium should be monitored to detect any chemical imbalances that may arise as a result of the therapy (DE, p.692, 699).
Time Frame:	Within 1 month of start of therapy	

4. All Patients:

Monitor:	Serum sodium	Rationale: Both potassium-sparing and thiazide diuretics promote sodium excretion. Although hyponatremia is rare with either drug alone, the combination of the two increases the risk of hyponatremia (DE, p. 692, 699).
Time Frame:	Within 1 month of start of therapy	

(cont'd)

Diuretic, Thiazide-type + Potassium-sparing type (cont'd) **CODE: 18**

NEW MONITORING: (cont'd) **Flag: R5**

Review Question: Indicate whether each monitoring action was done in the time specified.

Monitoring Actions:

5. Patients with diabetes:

Monitor:	Blood glucose	Rationale: Thiazides increase fasting blood glucose levels and decrease glucose tolerance during long-term therapy. Diabetics should have their glucose levels monitored more frequently than usual if on thiazide therapy (DE, p. 692).
Time Frame:	Within 3 months of start of therapy	

6. Patients on corticosteroids:

Monitor:	Serum potassium	Rationale: Corticosteroids may be associated with sodium retention and potassium depletion. When combined with thiazide diuretics, they enhance any hypokalemic effect (DE, p. 627, 691).
Time Frame:	Within 3 months of start of therapy	

7. Patients receiving lithium:

Monitor:	Serum lithium levels	Rationale: Patients taking lithium require frequent monitoring of serum lithium levels to avoid toxicity, as adverse reactions can occur with doses close to therapeutic levels. When electrolyte imbalance occurs (as with diuretic use), lithium is reabsorbed by the kidneys and may accumulate to toxic levels (DE, p. 279, 280).
Time Frame:	Within 3 months of start of therapy	

8. Patients with impaired liver function:

Monitor:	Serum potassium and serum sodium	Rationale: Hyponatremia is a common complication in patients with impaired liver function. All diuretics, and especially thiazide diuretics, should be used with caution in patients with chronic liver disease (DE, p. 693).
Time Frame:	Within 3 months of start of therapy	

NITRATE

CODE: 21

INDICATIONS: Flag: R2

Review Question: Indicate if any of the following conditions/diagnoses are in the medical record.

1. Angina, acute and chronic: Nitrates are direct-acting vasodilators; they interact with intracellular sulfhydryl groups to produce vasodilation. Sublingual, buccal, chewable, topical, and intravenous nitrates are used in antianginal therapy (DE, p. 527-8).

2. Congestive heart failure: Since nitrates increase venous capacitance and thus relieve pulmonary congestion, they are useful for patients with CHF. Oral isosorbide dinitrate and pentaerythritol tetranitrate as well as chewable nitrate preparations are more beneficial than sublingual nitrates and oral nitroglycerin (DE, p. 587).

DIAGNOSIS CONTRAINDICATIONS: Flag: R3

Review Question: Look ahead in the medical record and indicate if any of the conditions are found.

Contraindications List 1: Absolute Contraindications: None

Contraindications List 2: Consider risk-benefit when:

1. Orthostatic hypotension: Since nitrates may cause this condition, they should be given with caution to a patient who is prone to hypotension (DE, p. 528).

DRUG CONTRAINDICATIONS: Flag: R4

Review Question: Look ahead in the medical record and indicate if any of the drugs are found.

Drug List 1: Absolute Contraindications:

1. Transdermal nitrates: These preparations should not be used continuously for ≥24 hours because tolerance develops rapidly (DE, p. 528).

Drug List 2: Consider risk-benefit when: None

Nitrate (cont'd) CODE: 21

OLD MONITORING: **Flag: R5**

Review Question: Indicate whether each monitoring action was done in the time specified.

Monitoring Actions:

1. Patients with CHF:

Monitor:	Weight and lung exam	Rationale: Nitrates reduce venous tone, which leads to pooling of blood in the peripheral veins and decreased venous return. Decreased pre-load may improve symptoms (DE, p. 527). This item may be deleted from criteria.
Time Frame:	Every 6 months	

NEW MONITORING: **Flag: R5**

Review Question: Indicate whether each monitoring action was done in the time specified.

Monitoring Actions:

1. Patients with Angina:

Monitor:	Educate patient about possible exacerbation	Rationale: The vasodilatation caused by nitrates may cause profound hypotension and reflex tachycardia. The fall in perfusion pressure may worsen the symptoms of angina (DE, p. 528).
Time Frame:	Within 1 month of start of therapy	

2. Patients with CHF:

Monitor:	Weight and lung exam	Rationale: Nitrates reduce venous tone, which leads to pooling of blood in the peripheral veins and decreased venous return. Decreased pre-load may improve symptoms (DE, p. 527). This item may be deleted from criteria.
Time Frame:	Within 1 month of start of therapy	

NSULIN

CODE: 31

INDICATIONS: Flag: R2

Review Question: Indicate if any of the following conditions/diagnoses are in the medical record.

1. Diabetes mellitus, insulin-dependent (IDDM): Since patients with IDDM by definition do not respond to oral hypoglycemic agents, they require insulin (DE, p. 873; Harrison's, p. 1745).

2. Diabetes mellitus, non-insulin-dependent: For adequate control of disease, some non-insulin-dependent diabetics require insulin (Harrison's, p. 1745).

DIAGNOSIS CONTRAINDICATIONS: None Flag: R3

DRUG CONTRAINDICATIONS: Flag: R4

Review Question: Look ahead in the medical record and indicate if any of the drugs are found.

Drug List 1: Absolute Contraindications: None

Drug List 2: Consider risk-benefit when:

1. Fenfluramine: This drug may potentiate the hypoglycemic effect of insulin (DE, p. 884).

2. Corticosteroids (long-term, high-dose therapy):* Glucocorticoids counteract the hypoglycemic effect of insulin, and patients taking such steroids may need to have frequent assessment of insulin therapy (DE, p. 884).

3. Beta-blockers: Since beta-blockers potentiate and prolong hypoglycemia, patients taking both these drugs and insulin must be closely monitored (DE, p. 474).

*Therapy for 1 month with the equivalent of an average of 20 mg of prednisone daily.

Insulin (cont'd) CODE: 31

OLD MONITORING: **Flag: R5**

Review Question: Indicate whether each monitoring action was done in the time specified.

Monitoring Actions:

1. All Patients:

   Monitor: Blood glucose
   Time Frame: Every 3 months

   Rationale: Self-monitoring of blood glucose levels is recommended for all diabetic patients who take insulin. The laboratory blood glucose test serves mainly as a means of calibrating the patient's own blood glucose testing (DE, p. 879).

2. All Patients:

   Monitor: HgbA1C or fructosamine
   Time Frame: Annually

   Rationale: Glycosylated hemoglobin provides information on average blood glucose levels over the preceding 1 to 3 months (Singer, p. 126). The ADA recommends a HgbA1C as part of the standard care for diabetic patients (ADA, p. 3).

NEW MONITORING: **Flag: R5**

Review Question: Indicate whether each monitoring action was done in the time specified.

Monitoring Actions:

1. All Patients:

   Monitor: Blood glucose
   Time Frame: Within 3 months of start of therapy

   Rationale: Self-monitoring of blood glucose levels is recommended for all diabetic patients who take insulin. The laboratory blood glucose test serves mainly as a means of calibrating the patient's own blood glucose testing (DE, p. 879).

2. All Patients:

   Monitor: HgbA1C or fructosamine
   Time Frame: Within 3 months of start of therapy

   Rationale: Glycosylated hemoglobin provides information on average blood glucose levels over the preceding 1 to 3 months (Singer, p. 126). The ADA recommends a HgbA1C as part of the standard care for diabetic patients (ADA, p. 3).

3. Patients on Beta-blockers:

   Monitor: Educate patient about hypoglycemia (which may be potentiated by beta-blockers)

   Rationale: Beta-blockers may mask hypoglycemic symptoms. In some cases, beta-blockers may potentiate and prolong insulin-induced hypoglycemia (DE, p. 473).

ORAL HYPOGLYCEMIC AGENT

CODE: 32

INDICATIONS:

Flag: R2

Review Question: Indicate if any of the following conditions/diagnoses are in the medical record.

1. Diabetes mellitus, non-insulin-dependent (NIDDM): If diet alone does not control blood glucose, patients with NIDDM should be treated with an oral hypoglycemic agent (DE, p. 888).

2. Diabetes insipidus, central partial: Because of its effect on the renal response to vasopressin, chlorpropamide may be useful for patients with central, partial diabetes insipidus (DE, p. 708).

DIAGNOSIS CONTRAINDICATIONS:

Flag: R3

Review Question: Look ahead in the medical record and indicate if any of the conditions are found.

Contraindications List 1: Absolute Contraindications: None

Contraindications List 2: Consider risk-benefit when:

1. Patient aged >65 years-chlorpropamide: Chlorpropamide may lead to water retention with hyponatremia, particularly in patients taking thiazide diuretics. This complication can be life-threatening in a patient with congestive heart failure. Chlorpropamide is not generally given to the elderly (DE, p. 890).

2. Patient has renal impairment-glyburide: This item emerged from the criteria development process; however, it has not been verified, and investigators propose deletion.

Oral Hypoglycemic Agent (cont'd) CODE: 32

DRUG CONTRAINDICATIONS: Flag: R4

Review Question: Look ahead in the medical record and indicate if any of the drugs are found.

Drug List 1: Absolute Contraindications:

1. Beta-blockers: Beta-blockers potentiate the antidiabetic effect of the oral hypoglycemic agents (DE, p. 474); if both taken concurrently, careful monitoring of blood glucose levels is essential.

2. Insulin: Concomitant administration of insulin increases the risk of hypoglycemia in patients taking oral hypoglycemic agents (DE, p. 790).

Drug List 2: Consider risk-benefit when:

3. Phenytoin: Since this drug inhibits the release of endogenous insulin and may cause hyperglycemia, patients taking it may need to have the dosage of an oral hypoglycemic agent adjusted upward (DE, p. 890).

4. Corticosteroids (long-term, high-dose):* Since glucocorticoids antagonize the hypoglycemic effect of oral antidiabetic agents, patients taking both drugs may require an increased dose of the latter (DE, p. 890).

5. Anticoagulants: The anticoagulant dicumarol increases the risk of hypoglycemia if taken concomitantly with a sulfonylurea (DE, p. 890)

6. Thiazides: Drugs of this class increase blood glucose levels; thus if both a thiazide and an oral hypoglycemic agent are taken, the patient may require an increased dose of the latter (DE, p. 890).

7. Calcium channel blockers: This item emerged from the criteria development process; however, it has not been verified, and investigators propose deletion.

8. Salicylates (>3 g daily for >1 month): Because of their hypoglycemic effect, use of large doses of salicylates may require a decrease in the dosage of sulfonylureas (DE, p. 890).

9. Captopril: Captopril may cause hypoglycemia; therefore, the dose of a concomitantly administered sulfonylurea antidiabetic agent should be monitored or reduced as needed (DE, p. 890).

* Corticosteroid treatment for 1 month with an equivalent of an average of 20 mg of prednisone daily.

Oral Hypoglycemic Agent (cont'd) CODE: 32

OLD MONITORING: Flag: R5

Review Question: Indicate whether each monitoring action was done in the time specified.

Monitoring Actions:

1. All Patients:

Monitor: Blood glucose
Time Frame: Every 3 months

Rationale: Frequent monitoring of blood glucose is necessary to detect signs of hypoglycemic reactions. Hypoglycemic reactions have occurred after one dose, after two or three days, or after many months of therapy (DE, p. 888).

2. All Patients:

Monitor: HgbA1C
Time Frame: Annually

Rationale: Glycosylated hemoglobin provides information on average blood glucose levels over the preceding 1 to 3 months (Singer, p. 126). The ADA recommends a HgbA1C as part of the standard care for diabetic patients (ADA, p. 3).

3. Patients on Anticoagulants:

Monitor: Prothrombin time
Time Frame: Every month

Rationale: Thrombocytopenia has been reported with some sulfonylurea compounds when combined with anticoagulant drugs. Extra care should be taken to prevent hemorrhage when patients take an anticoagulant in addition to an oral hypoglycemic drug (DE, p. 890).

Oral Hypoglycemic Agent (cont'd) **CODE: 32**

NEW MONITORING: **Flag: R5**

Review Question: Indicate whether each monitoring action was done in the time specified.

Monitoring Actions:

1. All Patients:

   Monitor: Blood glucose
   Time Frame: Within 3 months of start of therapy

   Rationale: Frequent monitoring of blood glucose is necessary to detect signs of hypoglycemic reactions. Hypoglycemic reactions have occurred after one dose, after two or three days, or after many months of therapy (DE, p. 888).

2. All Patients:

   Monitor: HgbA1C
   Time Frame: Within 3 months of start of therapy

   Rationale: Glycosylated hemoglobin provides information on average blood glucose levels over the preceding 1 to 3 months (Singer, p. 126). The ADA recommends a HgbA1C as part of the standard care for diabetic patients (ADA, p. 3).

3. Patients receiving anticoagulants:

   Monitor: Prothrombin time
   Time Frame: Within 1 week of start of therapy

   Rationale: Thrombocytopenia has been reported with some sulfonylurea compounds when combined with anticoagulant drugs. Extra care should be taken to prevent hemorrhage when patients take an anticoagulant in addition to an oral hypoglycemic drug (DE, p. 890).

4. Patients receiving beta-blockers:

   Monitor: Educate patient about hypoglycemia and make note in record

   Rationale: Beta-blockers potentiate the antidiabetic effect of the oral hypoglycemic agents (DE, p. 474). In addition, beta-blockers may mask hypoglycemic symptoms (DE, p. 890).

5. Patients receiving chlorpropamide:

   Monitor: Serum sodium
   Time Frame: Within 1 month of start of therapy

   Rationale: Water retention and hyponatremia may occur in patients treated with chlorpropamide; these complications are more likely if patient has a condition that causes tendency to retain water (e.g., CHF) (DE, p. 890).

CORTICOSTEROID CODE: 41

INDICATIONS: Flag: R2

Review Question: Indicate if any of the following conditions/diagnoses are in the medical record.

1. Anti-inflammatory agent (e.g., for inflammatory arthritis, severe dermatitis: Prednisone and prednisolone are the corticosteroids most often used for these indications. However, other steroids, preferably those with little mineralocorticoid activity, may also be used, although dosage adjustment is more difficult because of their greater potency (DE, p. 1725).

2. Immunosuppressant (e.g., systemic lupus erythematosus, polymyalgia rheumatica, polymyositis, dermatomyositis): Oral prednisone is widely used for therapy of these immune disorders (DE, p. 364).

3. Severe asthma: Systemic corticosteroids are effective antiasthmatic drugs. However, because of their adverse effects, they should be used only after other drugs have failed. A brief course of an oral agent such as prednisone, given during an acute attack, may prevent the need for hospitalization (DE, p. 438).

4. Acute and chronic lymphocytic leukemia, non-Hodgkin's and Hodgkin's lymphomas, and multiple myelomas: Under certain defined conditions, corticosteroids may be useful in treatment of these conditions (Harrison's, p. 1415, 1560, 1611).

DIAGNOSIS CONTRAINDICATIONS: Flag: R3

Review Question: Look ahead in the medical record and indicate if any of the conditions are found.

Contraindications List 1: Absolute Contraindications:

1. Untreated tuberculosis: Because of their immunosuppressant effect, prolonged treatment with corticosteroids decreases resistance to infections of all types, and quiescent tuberculosis may be reactivated (DE, p. 1626).

Contraindications List 2: Consider risk-benefit when:

2. Treated tuberculosis: See above.

3. Diabetes: Corticosteroids have a hyperglycemic effect and should be used with caution in a patient with diabetes (DE, p. 1625).

4. Myocardial infarction in preceding month: Corticosteroids, particularly mineralocorticoids, may cause edema. Caution is required if these drugs are given to a patient with renal or cardiovascular disease (DE, p. 1624).

5. Esophagitis, gastritis, or peptic ulcer disease: Corticosteroids may cause various types of gastrointestinal distress and should be given with caution if the patient has any other risk factor (i.e., condition or drug use) for ulceration or other gastrointestinal problems (DE, p. 1624).

Corticosteroid (cont'd)

CODE: 41

DRUG CONTRAINDICATIONS: **Flag: R4**

Review Question: Look ahead in the medical record and indicate if any of the drugs are found.

Drug List 1: Absolute Contraindications:

1. Aspirin (high-dose and long-term use, i.e., 3 g/day for >1 month): Both aspirin and corticosteroids are associated with gastrointestinal distress and ulcers; therefore, caution should be used if these two types of drugs are to be administered concurrently. Furthermore, both salicylates and glucocorticoids cause elevations in serum glucose concentrations and may lead to or exacerbate diabetes (DE, p. 1624-5, 1702, 1704).

2. Nonsteroidal anti-inflammatory drugs (long-term use, i.e., >1 month): Both NSAIDs and corticosteroids can lead to gastrointestinal bleeding or ulceration. If the two types of drugs are administered together, caution should be used (Allison, p. 749-54; DE, p. 1624, 1702).

Drug List 2: Consider risk-benefit when:

3. Oral antidiabetic agents: Since corticosteroids have a hyperglycemic effect, the patient may require an increase in the dosage of hypoglycemic drug (DE, p. 1627).

4. Thiazides: Since thiazides and corticosteroids cause elevations in blood glucose levels, caution should be used if both are given concurrently (DE, p. 693, 1627).

5. Loop diuretics: Concomitant administration of corticosteroids may enhance the hypokalemic effect of loop diuretics (DE, p. 691).

Corticosteroid (cont'd)

CODE: 41

OLD MONITORING:

Flag: R5

Review Question: Indicate whether each monitoring action was done in the time specified.

Monitoring Actions:

1. All Patients:

   Monitor: Serum sodium
   Time Frame: Annually

   Rationale: Electrolyte imbalance and hypokalemia occur occasionally with corticosteroid drugs (DE, p. 1624).

2. All Patients:

   Monitor: Blood glucose
   Time Frame: Every 6 months

   Rationale: Corticosteroids may increase the blood glucose level, sometimes resulting in diabetes mellitus (DE, p. 1628).

3. All Patients:

   Monitor: Serum potassium
   Time Frame: Annually

   Rationale: Electrolyte imbalance and hypokalemia occur occasionally with corticosteroid drugs (DE, p. 1624).

4. All Patients:

   Monitor: Cataract development (ophthalmologic exam)
   Time Frame: Annually

   Rationale: Corticosteroids elevate intraocular pressure. Prolonged use may result in secondary ocular infections; in addition, subcapsular cataracts are common (DE, p. 1626).

5. All Patients:

   Monitor: Occult blood (stool test)
   Time Frame: Annually

   Rationale: Corticosteroids increase gastric acid, whether they cause peptic ulcers is unclear. They do, however, cause symptoms of peptic ulcer, perforation, and hemorrhage; therefore, periodic occult blood tests are recommended (DE, p. 1624).

6. Patients with CHF:

   Monitor: Weight and lung examination
   Time Frame: Every 3 months

   Rationale: Corticosteroids may cause fluid retention; caution is required when treating patients with CHF, as even a small amount of fluid retention could exacerbate the condition (DE, p. 1624).

7. Patients with hypertension:

   Monitor: Blood pressure
   Time Frame: Every 3 months

   Rationale: Electrolyte imbalance, fluid retention, and elevation of blood pressure may result from prolonged use of corticosteroids, worsening the condition of a patient with pre-existing hypertension (DE, p. 1624).

8. Patients with hypertension:

   Monitor: Standing blood pressure
   Time Frame: Annually

   Rationale: Electrolyte imbalance, fluid retention, and elevation of blood pressure may result from prolonged use of corticosteroids, worsening the condition of a patient with pre-existing hypertension (DE, p. 1624).

9. Patients with diabetes:

   Monitor: Blood glucose
   Time Frame: Every 2 weeks

   Rationale: Corticosteroids have a hyperglycemic effect; patients with diabetes should be closely monitored (DE, p. 1627).

Corticosteroid (cont'd)

CODE: 41

NEW MONITORING:

Flag: R5

Review Question: Indicate whether each monitoring action was done in the time specified.

Monitoring Actions:

1. All Patients:

Monitor: Blood glucose
Time Frame: Within 1 month of start of therapy

Rationale: Corticosteroids may increase the blood glucose level, sometimes resulting in diabetes mellitus (DE, p. 1628).

2. All Patients:

Monitor: Serum sodium and serum potassium
Time Frame: Within 1 month of start of therapy

Rationale: Electrolyte imbalance and hypokalemia occur occasionally with corticosteroid drugs (DE, p. 1624).

3. All Patients:

Monitor: Occult blood (stool test)
Time Frame: Within 1 year of start of therapy

Rationale: Corticosteroids increase gastric acid, whether they cause peptic ulcers is unclear. They do, however, cause symptoms of peptic ulcer, perforation, and hemorrhage; therefore, periodic occult blood tests are recommended (DE, p. 1624).

4. All Patients:

Monitor: Cataract development (ophthalmologic examination)
Time Frame: Within 1 year of start of therapy

Rationale: Corticosteroids elevate intraocular pressure. Prolonged use may result in secondary ocular infections; in addition, subcapsular cataracts are common (DE, p. 1626).

5. All Patients:

Monitor: PPD status (tuberculin test)
Time Frame: Before start of therapy

Rationale: Since reactivation of tuberculosis frequently occurs during long-term therapy with corticosteroids (DE, p. 1624), and since corticosteroid treatment suppresses the reaction to PPD test, need to know before treatment whether individual may have been exposed to tuberculosis.

(cont'd)

Corticosteroid (cont'd) CODE: 41

NEW MONITORING: (cont'd) **Flag: R5**

Review Question: Indicate whether each monitoring action was done in the time specified.

Monitoring Actions:

6. Patients with hypertension:

Monitor: Blood pressure
Time Frame: Within 3 months of start of therapy

Rationale: Electrolyte imbalance, fluid retention, and elevation of blood pressure may result from prolonged use of corticosteroids, worsening the condition of a patient with pre-existing hypertension (DE, p. 1624).

7. Patients with CHF:

Monitor: Weight and lung examination
Time Frame: Within 3 months of start of therapy

Rationale: Corticosteroids may cause fluid retention; caution is required when treating patients with CHF, as even a small amount of fluid retention could exacerbate the condition (DE, p. 1624).

8. Patients with diabetes:

Monitor: Blood glucose
Time Frame: Within 1 week of start of therapy

Rationale: Corticosteroids have a hyperglycemic effect; patients with diabetes should be closely monitored (DE, p. 1627).

NONSTEROIDAL ANTI-INFLAMMATORY ANALGESIC (NONSALICYLATE) (NSAID) CODE: 42

INDICATIONS: Flag: R2

Review Question: Indicate if any of the following conditions/diagnoses are in the medical record.

1. Arthritis, rheumatoid: A major use of NSAIDs is for treatment of rheumatoid arthritis. These drugs block the synthesis of prostaglandins, which promote inflammation. Both the therapeutic and adverse effects of NSAIDs may be attributed to inhibition of prostaglandin synthesis (DE, p. 1701).

2. Osteoarthritis: NSAIDs are used in the treatment of osteoarthritis (DE, p. 1701; Merck, p. 692).

3. Ankylosing spondylitis: NSAIDs are used for the treatment of this condition (DE, p. 1701).

4. Reiter's syndrome: NSAIDs are helpful in relieving the inflammation of this condition (DE, p. 1701).

5. Chronic severe pain: Some NSAIDs, particularly diflunisal, fenoprofen, ibuprofen, ketoprofen, and naproxen, are efficacious as analgesics (DE, 103, 1701).

6. Gout: Of the NSAIDs, indomethacin is the preferred agent for treatment of gout or gouty arthritis (DE, p. 1726).

7. Inflammation, nonrheumatic: The NSAIDs are useful for relief of pain in certain soft-tissue disorders associated with pain and inflammation (DE, p. 1701).

8. Headache, vascular or migraine: Ibuprofen may provide symptomatic relief of mild headache (DE, p. 122).

9. Bartter's syndrome: Use of NSAIDs to inhibit prostaglandin synthesis may be helpful for patients with this condition (Harrison's, p. 1199).

Nonsteroidal Anti-inflammatory Analgesic (Nonsalicylate) (NSAID) (cont'd) CODE: 42

DIAGNOSIS CONTRAINDICATIONS: Flag: R3

Review Question: Look ahead in the medical record and indicate if any of the conditions are found.

Contraindications List 1: Absolute Contraindications:

1. Hypersensitivity or allergy to aspirin: Aspirin and other salicylates can induce hypersensitivity reactions (Harrison's, p. 376).

2. Bone marrow depression, anemia, leukopenia: NSAIDs inhibit platelet aggregation. Phenylbutazone and indomethacin increase the risk of agranulocytosis; these two drugs and diclofenac increase the risk of aplastic anemia (DE, p. 1703).

3. Renal impairment: Elderly patients are at an increased risk of having renal function impaired by NSAIDs (DE, p. 1702).

4. Peptic ulcer disease: All NSAIDs may cause problem. No one of these drugs is safer than the others in this regard (DE, p. 1702; Allison, p. 749-54).

5. Bleeding problems or anticoagulant use: Serious hematologic effects of NSAIDs are rare. However, these drugs all inhibit platelet aggregation and thereby prolong prothrombin time. Thus they should be avoided or given with caution to patients with any hematologic problems and those taking anticoagulants (DE, p. 1703).

6. Congestive heart failure: Diclofenac and ibuprofen may cause fluid retention, particularly in patients with heart disease (DE, p. 1706, 1708).

7. Cholestatic jaundice: NSAIDs, particularly diclofenac, sulindac, and phenylbutazone, may cause hepatic dysfunction and abnormal liver function tests. The elderly are especially vulnerable (DE, p. 1703).

8. Upper-gastrointestinal-tract diseases: All NSAIDs may cause this problem. No one of these drugs is safer than the others in this regard (DE, p. 1702; Allison, p. 749-54).

9. Osteo- or rheumatoid arthritis: Because it can cause severe adverse effects, indomethacin is not the drug of choice for these conditions (DE, p. 1710).

10. Asthma or nasal polyps: These reactions may occur in patients with a history of adult-onset asthma or nasal polyps; NSAIDs should be used with caution in such patients (DE, p. 1703).

Contraindications List 2: Consider risk-benefit when: None

* Accept as meeting criterion but record separately if misoprostol (cytolic) is used to mitigate gastrointestinal irritation and peptic ulcer disease if present.

Nonsteroidal Anti-inflammatory Analgesic (Nonsalicylate) (NSAID) (cont'd) CODE: 42

DRUG CONTRAINDICATIONS: Flag: R4

Review Question: Look ahead in the medical record and indicate if any of the drugs are found.

Drug List 1: Absolute Contraindications:

1. Aspirin: Because of aspirin's effect on blood-clotting time, it should not be given concomitantly with phenylbutazone or indomethacin, which also may have adverse hematologic effects (DE, p. 1703-4).

2. Anticoagulants: Neither phenylbutazone nor indomethacin should be given with anticoagulants (DE, p. 1704).

Drug List 2: Consider risk-benefit when:

3. Anticoagulants: NSAIDs such as ibuprofen, diclofenac, naproxen, tolmetin, and sulindac can be used with anticoagulants if precautions are taken, including measurement of prothrombin time daily for the first 5 days of combined therapy (DE, p. 1704).

4. Methotrexate: NSAIDs may increase or prolong serum methotrexate concentration, leading to toxicity. Thus, NSAIDs are contraindicated when large doses of methotrexate are being taken (DE, p. 1704).

5. Chronic alcohol use: Since both alcohol and NSAIDs cause gastrointestinal irritation, they should not be used concomitantly (DE, p. 1702).

Nonsteroidal Anti-inflammatory Analgesic (Nonsalicylate) (NSAID) (cont'd) CODE: 42

OLD MONITORING: Flag: R5

Review Question: **Indicate whether each monitoring action was done in the time specified.**

Monitoring Actions:

1. All Patients:

Monitor: CBC and ask about gastric distress
Time Frame: Every 6 months

Rationale: Aplastic anemia, agranulocytosis, and related blood dyscrasias have been reported with NSAIDs. Gastric disturbances are the most common side effect, including bleeding ulcers and perforations, which may occur at any time (DE, p. 1702).

2. All Patients:

Monitor: BUN or serum creatinine
Time Frame: Every 6 months

Rationale: All NSAIDs can impair renal function, although renal toxicity is rare. Renal functioning should be evaluated with periodic urinalysis and BUN or creatinine levels (DE, p. 1702).

3. All Patients:

Monitor: SGOT or SGPT
Time Frame: Annually

Rationale: NSAIDs may cause hepatic dysfunction. Elevated levels of transaminase, alkaline phosphatase, and total bilirubin may occur. Hepatotoxicity should be evaluated periodically (DE, p. 1702).

4. All Patients:

Monitor: Urinalysis
Time Frame: Every 6 months

Rationale: All NSAIDs can impair renal function, although renal toxicity is rare. Renal functioning should be evaluated with periodic urinalysis and BUN or creatinine levels (DE, p. 1702).

5. Patients receiving lithium:

Monitor: Serum lithium levels
Time Frame: Every 3 months

Rationale: Patients taking lithium require frequent monitoring of serum lithium levels to avoid toxicity, as adverse reactions can occur with doses close to therapeutic levels. NSAIDs diminish lithium clearance and excretion, which can result in lithium toxicity (DE, p. 1705).

6. Patients receiving anticoagulants:

Monitor: Prothrombin time
Time Frame: Every month

Rationale: NSAIDs inhibit platelet aggregation and prolong prothrombin time; when given with an anticoagulant, effects are enhanced, increasing the risk of hemorrhage (DE, p. 1702).

7. Patients receiving diuretics:

Monitor: Serum sodium and serum potassium
Time Frame: Every 6 months

Rationale: Possible adverse reactions to NSAIDs include electrolyte disturbances, resulting in hyperkalemia and hyponatremia. Patients taking diuretics are at additional risk of electrolyte disturbance (DE, p. 1703).

8. Patients with renal impairment:

Monitor: BUN or serum creatinine
Time Frame: Every 4 months

Rationale: As NSAIDs can impair renal functioning, patients with renal insufficiency require close monitoring. In patients at risk, BUN or creatinine levels should be determined at the initiation of therapy and repeated frequently during prolonged therapy (DE, p. 1702).

Nonsteroidal Anti-inflammatory Analgesic (Nonsalicylate) (NSAID) (cont'd) CODE: 42

NEW MONITORING: Flag: R5

Review Question: Indicate whether each monitoring action was done in the time specified.

Monitoring Actions:

1. All Patients:

Monitor: CBC and ask about gastric distress
Time Frame: Within 3 months of start of therapy

Rationale: Aplastic anemia, agranulocytosis, and related blood dyscrasias have been reported with NSAIDs. Gastric disturbances are the most common side effect, including bleeding ulcers and perforations, which may occur at any time (DE, p. 1702).

2. All Patients:

Monitor: SGOT or SGPT
Time Frame: Within 1 year of start of therapy

Rationale: NSAIDs may cause hepatic dysfunction. Elevated levels of transaminase, alkaline phosphatase, and total bilirubin may occur. Hepatotoxicity should be evaluated periodically (DE, p. 1702).

3. All Patients:

Monitor: BUN or serum creatinine
Time Frame: Within 6 months of start of therapy

Rationale: All NSAIDs can impair renal function, although renal toxicity is rare. Renal functioning should be evaluated with periodic urinalysis and BUN or creatinine levels (DE, p. 1702).

4. All Patients:

Monitor: Urinalysis
Time Frame: Within 6 months of start of therapy

Rationale: All NSAIDs can impair renal function, although renal toxicity is rare. Renal functioning should be evaluated with periodic urinalysis and BUN or creatinine levels (DE, p. 1702).

5. Patients with gastrointestinal distress:

Monitor: Occult blood and ask about melena
Time Frame: Within 1 year of start of therapy

Rationale: All NSAIDs may cause gastrointestinal bleeding, ulceration, and/or perforation. Patients experiencing distress should be monitored for one of these more serious problems (DE, p. 1702).

6. Patients receiving lithium:

Monitor: Serum lithium levels
Time Frame: Within 3 months of start of therapy

Rationale: Patients taking lithium require frequent monitoring of serum lithium levels to avoid toxicity, as adverse reactions can occur with doses close to therapeutic levels. NSAIDs diminish lithium clearance and excretion, which can result in lithium toxicity (DE, p. 1705).

7. Patients receiving anticoagulants:

Monitor: Prothrombin time
Time Frame: Within 1 week of start of therapy

Rationale: NSAIDs inhibit platelet aggregation and prolong prothrombin time; when given with an anticoagulant, effects are enhanced, increasing the risk of hemorrhage (DE, p. 1702).

8. Patients receiving diuretics:

Monitor: Serum sodium and serum potassium
Time Frame: Within 6 months of start of therapy

Rationale: Possible adverse reactions to NSAIDs include electrolyte disturbances, resulting in hyperkalemia and hyponatremia. Patients taking diuretics are at additional risk of electrolyte disturbance (DE, p. 1703).

SALICYLATE

CODE: 43

INDICATIONS:

Flag: R2

Review Question: **Indicate if any of the following conditions/diagnoses are in the medical record.**

1. Chronic pain: Salicylates are used to treat pain due to chronic arthritis and certain soft-tissue disorders. Both the therapeutic and adverse effects of NSAIDs are thought to be related to their ability to inhibit prostaglandin synthesis (DE, p. 1701).

2. Inflammation, nonrheumatic: Salicylates are helpful in reducing inflammation (DE, p. 1701).

3. Arthritis, rheumatoid: Salicylates (except salicylamide) are commonly used for their analgesic and anti-inflammatory properties in treatment of rheumatoid arthritis (DE, p. 1701).

4. Osteoarthritis: Except for salicylamide, the salicylates are useful for relief of both pain and inflammation in patients with osteoarthritis (DE, p. 1701).

5. Migraine prophylaxis: Salicylates may relieve mild attacks of migraine headache (DE, p. 122).

Salicylate (cont'd)

DIAGNOSIS CONTRAINDICATIONS: **Flag: R3**

Review Question: Look ahead in the medical record and indicate if any of the conditions are found.

Contraindications List 1: Absolute Contraindications:

1. Gastrointestinal bleeding or ulcers: Gastrointestinal disturbances (e.g., pain, bleeding) are the most common adverse effects of salicylates. Physicians should inform patients of the risks (DE, p. 1702, 1704).

2. Bleeding disorders: Since salicylates prolong prothrombin time and aspirin (but not sodium salicylate or acetylated salicylates) prolongs bleeding time, these drugs should be used cautiously or avoided in patients taking anticoagulants and those with bleeding disorders (DE, p. 1704).

Contraindications List 2: Consider risk benefit when:

3. Nasal polyps or adult-onset asthma: These conditions indicate predisposition to hypersensitivity to aspirin and other NSAIDs. However, nonacetylated salicylates can be given, with caution, to patients with these conditions (DE, p. 1703).

4. Chronic alcohol use: Concomitant ingestion of aspirin (or other salicylates) and alcohol may lead to gastrointestinal bleeding (DE, p. 287).

Salicylate (cont'd) CODE: 43

DRUG CONTRAINDICATIONS: Flag: R4

Review Question: Look ahead in the medical record and indicate if any of the drugs are found.

Drug List 1: Absolute Contraindications:

1. Allergy to aspirin or other NSAIDs: About 0.3% of the population has intolerance toward aspirin, and many persons who have this intolerance are also intolerant toward other NSAIDs. Aspirin and other NSAIDs can also produce allergic reaction; if a patient is allergic to any of these drugs, other drugs of this class may also produce allergy or hypersensitivity and should be given with caution (DE, p. 105, 1704; Harrison's, p. 376).

2. Anticoagulants: Since aspirin inhibits platelet function and the salicylates, in general, can cause gastrointestinal bleeding, these drugs should be given with caution to patients who are taking anticoagulants (DE, p. 105).

3. NSAIDs: Concomitant use of aspirin and another NSAID may reduce the anti-inflammatory action and increase the adverse gastrointestinal effects (DE, p. 1705).

Drug List 2: Consider risk-benefit when:

4. Oral antidiabetic drugs: Salicylates can enhance the hypoglycemic effect of the sulfonylurea drugs; caution or monitoring is required if the patient is using both types of drugs (DE, p. 1705).

5. Methotrexate: Salicylates increase the toxicity of methotrexate by increasing its plasma concentration. The patient taking both types of drugs should be closely monitored (DE, p. 1705).

Salicylate (cont'd) **CODE: 43**

OLD MONITORING: **Flag: R5**

Review Question: **Indicate whether each monitoring action was done in the time specified.**

Monitoring Actions:

1. All Patients:

Monitor:	History for gastrointestinal distress	Rationale: Gastrointestinal distress is the most common adverse reaction of salicylates. Especially severe reactions may require discontinuance of drug (DE, p. 1704).
Time Frame:	Every 6 months	

2. All Patients:

Monitor:	Hematocrit	Rationale: Aspirin inhibits platelet aggregation and prolongs prothrombin time; large doses of salicylates may predispose patient to hemorrhage (DE, p. 1705).
Time Frame:	Every 6 months	

3. Patients with Chronic Alcohol Use:

Monitor:	Warn about risk of gastric bleeding	Rationale: Alcohol may increase the risk of gastrointestinal bleeding when taken with aspirin (DE, p. 1705).
Time Frame:	Annually	

4. Patients on Anticoagulants:

Monitor:	Prothrombin time	Rationale: Aspirin inhibits platelet aggregation and prolongs prothrombin time; large doses of salicylates prolong prothrombin time (DE, p. 1705).
Time Frame:	Every month	

Salicylate (cont'd)

CODE: 43

NEW MONITORING:

Flag: R5

Review Question: Indicate whether each monitoring action was done in the time specified.

Monitoring Actions:

1. All Patients:

Monitor:	History for gastrointestinal distress	Rationale: Gastrointestinal distress is the most common adverse reaction of salicylates. Especially severe reactions may require discontinuance of drug (DE, p. 1704).
Time Frame:	Within 6 months of start of therapy	

2. All Patients:

Monitor:	Hematocrit	Rationale: Aspirin inhibits platelet aggregation and prolongs prothrombin time; large doses of salicylates may predispose patient to hemorrhage (DE, p. 1705).
Time Frame:	Within 6 months of start of therapy	

3. Patients with Chronic Alcohol Use:

Monitor:	Warn about risk of gastric bleeding; ask about melena	Rationale: Alcohol may increase the risk of gastrointestinal bleeding when taken with aspirin (DE, p. 1705).

4. Patients on Anticoagulants:

Monitor:	Prothrombin time	Rationale: Aspirin inhibits platelet aggregation and prolongs prothrombin time; large doses of salicylates prolong prothrombin time (DE, p. 1705).
Time Frame:	Within 1 week of start of therapy	

BETA-ADRENERGIC AGONIST (ADRENERGIC BRONCHODILATOR) - INHALED CODE: 51

INDICATIONS: **Flag: R2**

Review Question: Indicate if any of the following conditions/diagnoses are in the medical record.

1. Bronchial asthma: All drugs of this class are useful for treatment and prophylaxis of asthma; the drug used for an individual patient should be chosen according to the patient's health status, with consideration given to other drugs used (DE, p. 444-8).

2. Bronchiectasis: This item emerged from the criteria development process but has not been verified.

3. Chronic bronchitis and emphysema: Inhalant beta-agonists can be helpful for treatment and prophylaxis in certain patients with bronchitis and emphysema (DE, p. 441-3).

DIAGNOSIS CONTRAINDICATIONS: **Flag: R3**

Review Question: Look ahead in the medical record and indicate if any of the conditions are found.

Contraindications List 1: Absolute Contraindications:

1. Coronary artery disease: Epinephrine and isoproterenol can cause tachycardia and cardiac rhythm disturbances; they should not be given to patients with coronary artery disease and should be given with caution to the elderly (DE, p. 436).

2. Hypertension: Epinephrine is usually contraindicated in patients with hypertension (DE, p. 445).

3. Hyperthyroidism: Epinephrine is generally contraindicated in patients with hyperthyroidism (DE, p. 445).

4. Cerebral insufficiency: Epinephrine should not be given to patients with cerebrovascular insufficiency (DE, p. 445).

Contraindications List 2: Consider risk-benefit when:

5. Patient age is ≥70 years: Epinephrine and related drugs should be given to the elderly with caution (DE, p. 445).

Beta-adrenergic Agonist (Adrenergic Bronchodilator) - Inhaled (cont'd) CODE: 51

DRUG CONTRAINDICATIONS: Flag: R4

Review Question: Look ahead in the medical record and indicate if any of the drugs are found.

Drug List 1: Absolute Contraindications:

1. Monoamine oxidase inhibitors: Severe hypertension and death may occur if epinephrine, ephedrine, or isoproterenol is given with a monoamine oxidase inhibitor (DE, p. 436).

2. Guanethidine: Ephedrine may antagonize the antihypertensive effect of guanethidine (DE, p. 436).

Drug List 2: Consider risk-benefit when:

3. Beta-adrenergic blockers: Beta-adrenergic bronchodilators may be less effective in patients taking beta-blockers or may antagonize the action of those drugs (DE, p. 436).

OLD MONITORING: Flag: R5

Review Question: Indicate whether each monitoring action was done in the time specified.

Monitoring Actions:

1. All Patients:

Monitor: Lung exam
Time Frame: Every 6 months

Rationale: Beta-adrenergic agonist drugs are given to dilate bronchioles, constrict blood vessels, and for the relief of bronchial edema. Lungs should be monitored to determine the response to the drug and detect adverse effects of rebound bronchospasm and drug tolerance (DE, p. 445).

NEW MONITORING: Flag: R5

Review Question: Indicate whether each monitoring action was done in the time specified.

Monitoring Actions:

1. All Patients:

Monitor: Lung exam
Time Frame: Within 1 month of start of therapy

Rationale: Beta-adrenergic agonist drugs are given to dilate bronchioles, constrict blood vessels, and for the relief of bronchial edema. Lungs should be monitored to determine the response to the drug and detect adverse effects of rebound bronchospasm and drug tolerance (DE, p. 445).

CHOLINERGIC INHIBITOR (INHALATION-LOCAL) CODE: 52

INDICATIONS: **Flag: R2**

Review Question: Indicate if any of the following conditions/diagnoses are in the medical record.

1. Emphysema: Ipratropium is the drug of choice for treatment of emphysema in the elderly. Since the drug is adsorbed poorly, inhalation is safe and usually free of adverse effects (DE, p. 457).

2. Chronic obstructive pulmonary disease: Ipratropium is effective for treatment of chronic bronchitis or COPD (DE, p. 457).

3. Bronchial asthma (only if beta-adrenergics or xanthines fail): Ipratropium may be useful in asthmatics if theophylline and/or an inhaled beta-agonist has failed (DE, p. 457).

DIAGNOSIS CONTRAINDICATIONS: **Flag: R3**

Review Question: Look ahead in the medical record and indicate if any of the conditions are found.

Contraindications List 1: Absolute Contraindications:

1. Open-angle glaucoma: Although ipratropium can probably be used safely in patients with glaucoma, caution should be used because high doses of atropine, a chemically similar drug, can cause glaucoma (DE, p. 457).

2. Urinary retention: Ipratropium is thought to be safe for patients with bladder-neck obstruction; however, because of the similarity between this drug and atropine (which can cause difficulty in urination), ipratropium should be used with caution in patients who have any type of urinary blockage (DE, p. 457).

Contraindications List 2: Consider risk-benefit when: None

DRUG CONTRAINDICATIONS: None **Flag: R4**

MONITORING: None routinely indicated. **Flag: R5**

XANTHINE-DERIVATIVE (ORAL) CODE: 53

INDICATIONS: Flag: R2

Review Question: Indicate if any of the following conditions/diagnoses are in the medical record.

1. Asthma, bronchial: Theophylline is frequently used for maintenance therapy (treatment and prophylaxis) of patients with asthma (DE, p. 449).
2. Emphysema, pulmonary: Theophylline may be useful in some patients with emphysema (DE, p.449).
3. Chronic bronchitis: Theophylline may benefit patients with bronchitis who also have bronchospasm (DE, p. 449).

DIAGNOSIS CONTRAINDICATIONS: Flag: R3

Review Question: Look ahead in the medical record and indicate if any of the conditions are found.

Contraindications List 1: Absolute Contraindications: None

Contraindications List 2: Consider risk-benefit when:

1. Gastritis or peptic ulcer (active or past): Since theophylline compounds increase gastric acidity, they should be avoided (or used cautiously) in patients with gastrointestinal ulcers or gastroesophageal reflux (DE, p. 449).
2. Congestive heart failure: Since theophylline compounds can cause disturbances in cardiac rhythm, they should be given with caution to elderly persons with CHF (DE, p. 449).
3. Liver disease: This item emerged from the criteria development process but has not been verified.
4. Prostatic hypertrophy: Bladder relaxation that may result from use of theophylline can pose a problem for a patient who also has prostatic hypertrophy (DE, p. 449).
5. Alcoholism: This item emerged from the criteria development process but has not been verified.

Xanthine-Derivative (Oral) (cont'd) CODE: 53

DRUG CONTRAINDICATIONS: Flag: R4

Review Question: Look ahead in the medical record and indicate if any of the drugs are found.

Drug List 1: Absolute Contraindications:

1. Concomitant use of another xanthine derivative: Dietary methylxanthines (e.g., caffeine and theobromine) compete with theophylline at metabolic sites and appear to decrease theophylline clearance. Patients who reduce their intake of methylxanthines may require a decreased dose of theophylline (DE, p. 450).

Drug List 2: Consider risk-benefit when:

2. Cimetidine: Commonly used doses of cimetidine may reduce the renal clearance and prolong the plasma half-life of theophylline, possibly leading to toxicity (DE, p. 450).
3. Erythromycin (therapy for >3 days): Usual doses of some macrolide antibiotics (e.g., erythromycin) may reduce the clearance and prolong the plasma half-life of theophylline; toxicity may result. The maintenance dose of theophylline should be decreased by 33% in patients taking erythromycin for >3 days (DE, p. 450).
4. Beta-blockers: Beta-blocking agents may prolong the half-life of theophylline (DE, p. 450).
5. Furosemide: This drug also may prolong the plasma half-life of theophylline (DE, p. 450).
6. Propranolol: This item emerged from the criteria development process but has not been verified.

OLD MONITORING: Flag: R5

Review Question: Indicate whether each monitoring action was done in the time specified.

Monitoring Actions:

1. All Patients:

Monitor: Serum theophylline
Time Frame: Every 3 months

Rationale: Since the effective plasma level of theophylline is close to toxic concentration, periodic determinations of drug concentration are recommended (DE, p. 449).

NEW MONITORING: Flag: R5

Review Question: Indicate whether each monitoring action was done in the time specified.

Monitoring Actions:

1. All Patients:

Monitor: Serum theophylline
Time Frame: Within 1 month of start of therapy

Rationale: Adjustments in drug dosage should be based on serum theophylline concentrations (DE, p. 451).

BETA-ADRENERGIC AGONIST + XANTHINE-DERIVATIVE (ORAL) CODE: 54

INDICATIONS: Flag: R2

Review Question: Indicate if any of the following conditions/diagnoses are in the medical record.

1. Asthma, bronchial: Only in patient who cannot use metered inhaler correctly and not in patients >65 years old.

DIAGNOSIS CONTRAINDICATIONS: Flag: R3

Review Question: Look ahead in the medical record and indicate if any of the conditions are found.

Contraindications List 1: Absolute Contraindications:

1. Angina
2. Cardiac arrhythmias
3. Hypertension
4. Hyperthyroidism
5. Gastritis or peptic ulcer, active or history of
6. Congestive heart failure

Contraindications List 2: Consider risk-benefit when: None

Beta-adrenergic Agonist + Xanthine-derivative (Oral) (cont'd) **CODE: 54**

DRUG CONTRAINDICATIONS: **Flag: R4**

Review Question: Look ahead in the medical record and indicate if any of the drugs are found.

Drug List 1: Absolute Contraindications:

1. Beta-adrenergic blockers
2. Monoamine oxidase inhibitors
3. Other xanthine derivative
4. Guanethidine

Drug List 2: Consider risk-benefit when:

5. Cimetidine
6. Erythromycin (therapy for >3 days)
7. Furosemide
8. Propranolol

Beta-adrenergic Agonist + Xanthine-derivative (Oral) (cont'd) CODE: 54

OLD MONITORING: Flag: R5

Review Question: Indicate whether each monitoring action was done in the time specified.

Monitoring Actions:

1. All Patients:

Monitor: Lung exam
Time Frame: Every 6 months

Rationale: Beta-adrenergic agonist drugs are given to dilate bronchioles, constrict blood vessels, and for the relief of bronchial edema. Lungs should be monitored to determine the response to the drug and detect adverse effects of rebound bronchospasm and drug tolerance (DE, p. 445).

2. All Patients:

Monitor: Serum theophylline
Time Frame: Annually

Rationale: Since the effective plasma level of theophylline is close to toxic concentration, periodic determinations of drug concentration are recommended (DE, p. 449).

3. All Patients:

Monitor: Pulse
Time Frame: Every 6 months

Rationale: Adverse reactions to drugs of this class include palpitations and tachycardia. In addition, patients taking theophylline with a pre-existing tachycardia have reported increased frequency of arrhythmias (DE, p. 445, 449).

4. All Patients:

Monitor: Blood pressure
Time Frame: Every 6 months

Rationale: Beta-adrenergic agonists cause increased peripheral vascular resistance, which may result in hypertension (DE, p. 446).

5. All Patients:

Monitor: Standing blood pressure
Time Frame: Annually

Rationale: Beta-adrenergic agonists cause increased peripheral vascular resistance, which may result in hypertension (DE, p. 446).

Beta-adrenergic Agonist + Xanthine-derivative (Oral) (cont'd) **CODE: 54**

NEW MONITORING: **Flag: R5**

Review Question: Indicate whether each monitoring action was done in the time specified.

Monitoring Actions:

1. All Patients:

   Monitor: Lung exam
   Time Frame: Within 1 month of start of therapy

   Rationale: Beta-adrenergic agonist drugs are given to dilate bronchioles, constrict blood vessels, and for the relief of bronchial edema. Lungs should be monitored to determine the response to the drug and detect adverse effects of rebound bronchospasm and drug tolerance (DE, p. 445).

2. All Patients:

   Monitor: Serum theophylline
   Time Frame: Within 1 month of start of therapy

   Rationale: Since the effective plasma level of theophylline is close to toxic concentration, periodic determinations of drug concentration are recommended (DE, p. 449).

3. All Patients:

   Monitor: Pulse
   Time Frame: Within 1 month of start of therapy

   Rationale: Adverse reactions to drugs of this class include palpitations and tachycardia. In addition, patients taking theophylline with a pre-existing tachycardia have reported increased frequency of arrhythmias (DE, p. 445, 449).

4. All Patients:

   Monitor: Blood pressure
   Time Frame: Within 1 month of start of therapy

   Rationale: Beta-adrenergic agonists cause increased peripheral vascular resistance, which may result in hypertension (DE, p. 446).

BETA-ADRENERGIC AGONIST (ORAL) CODE: 55

INDICATIONS: Flag: R2

Review Question: Indicate if any of the following conditions/diagnoses are in the medical record.

1. Asthma: Albuterol is a drug of choice for asthma; isoproterenol, probutaline, and metaproterenol are also used orally. Ephedrine is not as effective as the others and should rarely be used in the elderly. Sublingual use of isoproterenol is not recommended (DE, p. 444-8).

2. Bronchiectasis: This item emerged from the criteria development process but has not been verified.

DIAGNOSIS CONTRAINDICATIONS: Flag: R3

Review Question: Look ahead in the medical record and indicate if any of the conditions are found.

Contraindications List 1: Absolute Contraindications: None

Contraindications List 2: Consider risk-benefit when:

1. Coronary heart disease: Because of the potential of these drugs to cause tachycardia and/or arrhythmias, they should be used with caution in patients with CHD (DE, p. 444-8).

2. Hypertension: Ephedrine may cause increased peripheral vascular resistance, leading to hypertension (DE, p. 446).

3. Hyperthyroidism: Because of its similarity to epinephrine, ephedrine is generally contraindicated in patients with this condition (DE, p. 445-6).

4. Angina: Because of their potential to disturb cardiac rhythm, these drugs should be given with caution to patients with angina (DE, p. 444-8).

5. Cardiac arrhythmia: Since these drugs may cause arrhythmia or tachycardia, they should be given with caution to patients who already have these problems (DE, p. 444-8).

Beta-Adrenergic Agonist (Oral) (cont'd) **CODE: 55**

DRUG CONTRAINDICATIONS:

Flag: R4

Review Question: Look ahead in the medical record and indicate if any of the drugs are found.

Drug List 1: Absolute Contraindications:

1. Monoamine oxidase inhibitors: Patients using these drugs should not also use ephedrine (DE, p. 446).
2. Guanethidine: This drug should not be used concomitantly with ephedrine (DE, p. 446).

Drug List 2: Consider risk-benefit when:

3. Beta-adrenergic blockers: Adrenergic bronchodilators may be less effective in patients receiving beta-blockers or they may antagonize the action of these drugs (DE, p. 436).

OLD MONITORING

Flag: R5

Review Question: Indicate whether each monitoring action was done in the time specified.

Monitoring Actions:

1. All Patients:

Monitor:	Lung exam	Rationale: Beta-adrenergic agonist drugs are given to dilate bronchioles, constrict blood vessels, and for the relief of bronchial edema. Lungs should be monitored to determine the response to the drug and detect adverse effects of rebound bronchospasm and drug tolerance (DE, p. 445).
Time Frame:	Every 6 months	

2. All Patients:

Monitor:	Pulse	Rationale: Adverse reactions to drugs of this class include palpitations and tachycardia (DE, p. 445).
Time Frame:	Every 6 months	

3. All Patients:

Monitor:	Blood pressure and standing blood pressure	Rationale: Beta-adrenergic agonists cause increased peripheral vascular resistance, which may result in hypertension (DE, p. 446).
Time Frame:	Every 6 months	

Beta-adrenergic Agonist (Oral) (cont'd) CODE: 55

NEW MONITORING: Flag: R5

Review Question: Indicate whether each monitoring action was done in the time specified.

Monitoring Actions:

1. All Patients:

Monitor:	Lung exam	Rationale: Beta-adrenergic agonist drugs are given to dilate bronchioles, constrict blood vessels, and for the relief of bronchial edema. Lungs should be monitored to determine the response to the drug and detect adverse effects of rebound bronchospasm and drug tolerance (DE, p. 445).
Time Frame:	Within 1 month of start of therapy	

2. All Patients:

Monitor:	Pulse	Rationale: Adverse reactions to drugs of this class include palpitations and tachycardia (DE, p. 445).
Time Frame:	Within 1 months of start of therapy	

3. All Patients:

Monitor:	Blood pressure	Rationale: Beta-adrenergic agonists cause increased peripheral vascular resistance, which may result in hypertension (DE, p. 446).
Time Frame:	Within 1 month of start of therapy	

CEPHALOSPORIN

CODE: 61

INDICATIONS:

Flag: R2

Review Question: Indicate if any of the following conditions/diagnoses are in the medical record.

First generation:

1. Lower-respiratory-tract infections: Use cephalexin, cephradine, or cefadroxil only if organism is resistant or unresponsive to other antibiotics or patient is allergic to penicillin, ampicillin, sulfonamides, or trimethoprim/sulfamethoxazole (TMP/SMZ) (DE, p. 1212, 1244-7).

2. Urinary-tract infections: Use a first-generation cephalosporin only if infection is unresponsive to other antibiotics or patient is allergic to penicillin, ampicillin, sulfonamides, or TMP/SMZ (DE, p. 1212, 1244-7).

3. Skin and soft-tissue infections: First-generation cephalosporins are appropriate therapy if the infection is unresponsive to other antibiotics or patient is allergic to penicillin, ampicillin, sulfonamides, or TMP/SMZ (DE, p. 1212, 1244-7).

4. Bone infections: First-generation cephalosporins are appropriate therapy if the infection is unresponsive to other antibiotics or patient is allergic to penicillin, ampicillin, sulfonamides, or TMP/SMZ (DE, p. 1212, 1244-7).

Second generation:

5. Otitis media and sinusitis: Use cefaclor if infection is caused by *Haemophilus influenzae* or *Moraxella catarrhalis* that is resistant to amoxicillin or if patient is allergic to penicillins or sulfonamides (DE, p. 1247).

6. Lower-respiratory-tract infections: Use cefaclor or cefuroxime if infection is caused by organism resistant or unresponsive to other agents or patients is allergic to penicillins, sulfonamides, or TMP/SMZ (DE, p. 1247-8).

7. Urinary-tract infections: Use a second-generation cephalosporin if the infection is unresponsive to other agents (including first-generation cephalosporins) or patient is allergic to penicillins, sulfonamides, or TMP/SMZ (DE, p. 1212,1247).

8. Skin and soft-tissue infections: Cefaclor or cefuroxime is recommended if the infection is unresponsive to other agents or the patient is allergic to penicillins or sulfonamides or TMP/SMZ. (DE, p. 1247).

9. Bone infections: Mild-to-moderate bone infections may be treated with cefaclor if other agents are ineffective (DE, p. 1212).

10. Gonorrhea: Cefuroxime is effective for uncomplicated urethral, endocervical, or rectal gonorrhea or for completion of therapy of disseminated gonococcal infection after parenteral administration of ceftriaxone (DE, p. 1212-3, 1247).

Third generation:

12. Urinary-tract infections due to bacteria resistant to TMP/SMZ, amoxicillin/potassium lavulanate, or ciprofloxacin: Use cefixime (DE, p. 1212, 1247-9).

Cephalosporin (cont'd) CODE: 61

DIAGNOSIS CONTRAINDICATIONS: **Flag: R3**

Review Question: Look ahead in the medical record and indicate if any of the conditions are found.

Contraindications List 1: Absolute Contraindications:

1. Allergy to cephalosporins: Hypersensitivity can occur after administration of cephalosporins (DE, p. 1167-8, 1213).

Contraindications List 2: Consider risk-benefit when:

2. Allergy to penicillin: Although probably fewer than 5% of persons allergic to penicillin are also allergic to cephalosporins, it is current opinion that these drugs should not be given to patients who have had immediate hypersensitivity reactions to penicillins (DE, p. 1213; Harrison's,p.316).

3. History of colitis: Pseudomembranous colitis, due to *Clostridium difficile*, is rare after cephalosporin use (DE, p. 1214).

4. Renal function impairment: Although cephalosporins are not generally nephrotoxic at recommended dosages, they should be used with caution in patients with impaired renal function (DE, p. 1214, 1245). (Impaired renal function is defined as BUN of >50 mg/dL, or creatinine of >2.5 mg/dL. Although these values are higher than those cited in the literature [Harrison's; 10-20 mg/dL; Merck, 12-20 mg/dL, respectively], DEMPAQ set higher limits to allow for the fact that the elderly may have conditions or may use drugs that cause renal dysfunction [Harrison's, p. A-3; Merck, p. 1184]).

DRUG CONTRAINDICATIONS: None **Flag: R4**

MONITORING: None **Flag: R5**

ERYTHROMYCIN

CODE: 62

INDICATIONS: **Flag: R2**

Review Question: Indicate if any of the following conditions/diagnoses are in the medical record.

1. Pneumonia: Erythromycin is effective treatment for atypical pneumonia caused by *Mycoplasma pneumoniae* as well as for pneumonia due to *Streptococcus pneumoniae* (especially in penicillin-allergic patients) and Legionnaire's disease (DE, p. 1274).
2. Pertussis: Although antimicrobial therapy does not alter the course of this disease, which is caused by a toxin, a 14-day course of erythromycin eliminates nasopharyngeal carriage of *Bordetella pertussis*. This antibiotic is also given prophylactically to exposed persons (DE, p. 1275).
3. Streptococcal pharyngitis: Erythromycin is an alternative to penicillin for streptococcal tonsillitis and pharyngitis in penicillin-allergic patients (DE, p. 1275).
4. Bronchitis: Erythromycin can be used for bronchitis due to some bacteria such as *Moraxella catarrhalis*, *Mycoplasma pneumoniae*, and *Streptococcus pneumoniae* (DE, p. 1080).
5. Prophylaxis for dental procedures: Erythromycin can be used to prevent bacterial endocarditis in penicillin-allergic patients with cardiac abnormalities (DE, p. 1275).
6. Otitis media: Acute otitis media due to *Streptococcus pneumoniae* or *Streptococcus pyogenes* can be treated with erythromycin, but penicillin is the drug of choice (except for penicillin-allergic patients) (DE, p. 1275).
7. Skin and soft-tissue infections: Erythromycin is useful for treatment of some skin infections (e.g., cellulitis and erysipelas) (DE, p. 1068-9, 1275).
8. Campylobacter infections: Erythromycin is the drug of choice for gastroenteritis due to *Campylobacter jejuni* (DE, p. 1090, 1275).

DIAGNOSIS CONTRAINDICATIONS: **Flag: R3**

Review Question: Look ahead in the medical record and indicate if any of the conditions are found.

Contraindications List 1: Absolute Contraindications:

1. Allergy to erythromycin: Rashes, fever, and eosinophilia sometimes occur; serious reactions (e.g., anaphylaxis) are rare (DE, p. 1276).

Contraindications List 2: Consider risk-benefit in presence of:

2. Hepatic impairment: Of the various forms of erythromycin, the estolate has most often been associated with hepatic dysfunction. Thus, other forms of the drug are preferred for patients with liver disease (DE, p. 1276).

Erythromycin (cont'd) CODE: 62

DRUG CONTRAINDICATIONS: None **Flag: R4**

OLD MONITORING: **Flag: R5**

Review Question: Indicate whether each monitoring action was done in the time specified.

Monitoring Actions:

1. Patients Receiving Treatment >2 Weeks and on Anticoagulants:

   Monitor: Prothrombin time
   time Frame: Every month

   Rationale: Erythromycin administered with anticoagulants such as warfarin can prolong prothrombin time and result in hemorrhage (DE, p. 1277).

NEW MONITORING: **Flag: R5**

Review Question: Indicate whether each monitoring action was done in the time specified.

Monitoring Actions:

1. Patients Receiving Treatment >2 Weeks and on Carbamazepine or Phenytoin:

   Monitor: Serum levels of these 2 drugs
   Time Frame: Within 1 month of start of therapy

   Rationale: Plasma levels of carbamazepine and phenytoin can be elevated by erythromycin, increasing the potential for carbamazepine or phenytoin toxicity (DE, p. 1277).

2. Patients Receiving Treatment >2 Weeks and on Anticoagulants:

   Monitor: Prothrombin time
   Time Frame: Within 1 week of start of therapy

   Rationale: Erythromycin administered with anticoagulants such as warfarin can prolong prothrombin time and result in hemorrhage (DE, p. 1277).

3. Patients Receiving Treatment >2 Weeks and on Theophylline:

   Monitor: Serum levels
   Time Frame: Within 1 month of start of therapy

   Rationale: Erythromycin can reduce renal clearance and increase plasma levels of theophylline, increasing the potential for theophylline toxicity (DE, p. 1277).

PENICILLIN

CODE: 63

INDICATIONS:

Flag: R2

Review Question: Indicate if any of the following conditions/diagnoses are in the medical record.

1. Skin and soft-tissue infections: Penicillin is the drug of choice for streptococcal pyoderma, whereas penicillinase-resistant penicillins are the drugs of choice for staphylococcal pyoderma (DE, p. 1163).

2. Upper-respiratory-tract infections: Penicillin V is the drug of choice for pharyngitis due to *Streptococcus pyogenes* (group A, beta hemolytic); penicillin G is an alternative to ceftriaxone for gonococcal pharyngitis caused by susceptible strains of *Neisseria gonorrhoeae* (DE, p. 1163).

3. Lower-respiratory-tract infections: Oral penicillin is the drug of choice for mild, uncomplicated cases of pneumonia caused by *Streptococcus pneumoniae* (DE, p. 1164).

4. Infections due to nonresistant streptococci and staphylococci: Penicillin is the drug of choice for treatment of infections due to susceptible gram-positive cocci (DE, p. 1161-2).

5. Prophylaxis for dental procedures: Penicillin V is used for prophylaxis prior to dental procedures or other surgery in patients at high risk of infective endocarditis (DE, p. 1166, 1174, 1177).

DIAGNOSIS CONTRAINDICATIONS:

Flag: R3

Review Question: Look ahead in the medical record and indicate if any of the conditions are found.

Contraindications List 1: Absolute Contraindications:

1. Previous allergic reaction to a penicillin or cephalosporin: Drugs of the penicillin class should not be given to patients who have had a hypersensitivity reaction to any drug of the penicillin or cephalosporin group (DE, p. 1167-8).

Contraindications List 2: Consider risk-benefit when:

2. History of gastrointestinal disease: Pseudomembranous colitis due to *Clostridium difficile* may develop during or after penicillin therapy (DE, p. 1169).

DRUG CONTRAINDICATIONS: None of significance. **Flag: R4**

MONITORING: None **Flag: R5**

TETRACYCLINE

CODE: 64

INDICATIONS:

Flag: R2

Review Question: Indicate if any of the following conditions/diagnoses are in the medical record.

1. Atypical pneumonia: Tetracyclines are active against *Chlamydia* and *Mycoplasma*, two common causes of atypical pneumonia (DE, p. 1292).
2. Acute and chronic bronchitis: Although the role of infection is unclear, tetracyclines are used for treatment (DE, p. 1292).
3. Lyme disease: Doxycycline or tetracycline is preferred for early Lyme disease (stage I); they may also be useful in stage II or III Lyme disease (DE, p. 1291).
4. Pelvic inflammatory disease: Tetracyclines are the preferred drugs for pelvic inflammatory disease (PID) due to *Chlamydia trachomatis* and are alternatives to ceftriaxone for gonococcal PID (DE, p. 1291).
5. Chronic prostatitis: Doxycycline may be effective for chronic prostatitis, especially if it is caused by *Chlamydia trachomatis* (DE, p. 1292).
6. Nongonococcal urethritis: Tetracycline is effective for nongonococcal urethritis (e.g., due to *Chlamydia trachomatis*) (DE, p. 1291).
7. Urinary-tract infections: Tetracyclines can be effective for acute, uncomplicated infections of the lower urinary tract (cystitis) (DE, p. 1292).

DIAGNOSIS CONTRAINDICATIONS:

Flag: R3

Review Question: Look ahead in the medical record and indicate if any of the conditions are found.

Contraindications List 1: Absolute Contraindications:

1. Renal impairment: Tetracyclines can produce negative nitrogen balance, increase BUN levels, and exacerbate renal dysfunction; except for doxycycline, these drugs should not be given to patients with renal impairment (DE, p. 1293).

Contraindications List 2: Consider risk-benefit when: None

Tetracycline (cont'd) **CODE: 64**

DRUG CONTRAINDICATIONS: **Flag: R4**

Review Question: Look ahead in the medical record and indicate if any of the drugs are found.

Drug List 1: Absolute Contraindications: None

Drug List 2: Consider risk-benefit when:

1. Coumarin-type anticoagulants: Tetracyclines may increase plasma prothrombin time and potentiate the effects of coumarin-type anticoagulants. Dose of the anticoagulant may need to be reduced (DE, p. 1294).

OLD MONITORING: None **Flag: R5**

NEW MONITORING: **Flag: R5**

Review Question: Indicate whether each monitoring action was done in the time specified.

Monitoring Actions:

1. Patients on Minocycline:

Monitor:	Warn about vestibular effect and risk of driving or operating machinery	Rationale: There is a high incidence of vestibular toxicity with minocycline (DE, p. 1292).

AMINOPENICILLINS

CODE: 65

INDICATIONS:

Flag: R2

Review Question: Indicate if any of the following conditions/diagnoses are in the medical record.

1. Otitis media: Amoxicillin or ampicillin is the drug of choice for this infection. Effective alternatives for strains of *Haemophilus influenzae* and *Moraxella catarrhalis* resistant to these two agents are erythromycin plus a sulfonamide, trimethoprim plus sulfamethoxazole (TMP/SMZ), cefaclor, and amoxicillin plus potassium clavulanate (Augmentin) (DE, p. 1163).

2. Acute sinusitis: Amoxicillin or ampicillin is the drug of choice unless the infection is caused by a beta-lactamase-producing strain of *Haemophilus influenzae* or *Moraxella catarrhalis* (see Penicillinase-resistant Penicillins) (DE, p. 1163, 1184).

3. Gastrointestinal infections: Biliary-tract infections are often treated with ampicillin plus an aminoglycoside. Although ampicillin (but not amoxicillin) may be effective for gastroenteritis due to *Shigella*, trimethoprim/sulfamethoxazole is the drug of choice for treatment of shigellosis (DE, p. 1164).

4. Urinary-tract infections: Ampicillin or amoxicillin may be used for treatment of acute bacterial cystitis in women (DE, p. 1165).

5. Acute prostatitis: Ampicillin is useful for therapy of this infection (DE, p. 1182).

6. Mild pelvic inflammatory disease: Single-dose ampicillin or amoxicillin may be used for mild cases of gonococcal pelvic inflammatory disease in ambulatory patients (DE, p. 1165).

7. Acute epididymoorchitis: Ampicillin or amoxicillin is effective for epididymoorchitis due to *Neisseria gonorrhoeae* (DE, p. 1165).

8. Urethral gonorrhea: Amoxicillin may be used as therapy if the infection was acquired from a source proved not to have penicillin-resistant *Neisseria gonorrhoeae* (DE, p. 1116).

9. Pneumonia: Ampicillin is an alternative drug for treatment of pneumonia due to susceptible strains of *Haemophilus influenzae*. (DE, p. 1182).

Aminopenicillins (cont'd) CODE: 65

DIAGNOSIS CONTRAINDICATIONS: **Flag: R3**

Review Question: Look ahead in the medical record and indicate if any of the conditions are found.

Contraindications List 1: Absolute Contraindications: None

Contraindications List 2: Consider risk-benefit when:

1. Allergy to any penicillin: Allergic reactions including urticaria, angioedema, and anaphylaxis may follow administration of any penicillin (DE, p. 1167-8, 1182-4).

DRUG CONTRAINDICATIONS: None **Flag: R4**

MONITORING: None **Flag: R5**

PENICILLINASE-RESISTANT PENICILLINS

CODE: 66

INDICATIONS: Flag: R2

Review Question: Indicate if any of the following conditions/diagnoses are in the medical record.

1. Infections of skin and soft tissue: Cloxacillin and dicloxacillin are the preferred drugs for treatment of mild-to-moderate staphylococcal infections of the skin and soft tissues. Oxacillin is an alternative (DE, p. 1180-1).

2. Joint infections: Mild-to-moderate staphylococcal infections of joints may be treated with cloxacillin or dicloxacillin, with oxacillin as an alternative (DE, p. 1180-1).

3. Respiratory- and genitourinary-tract infections: Cloxacillin and dicloxacillin are useful for treatment of mild-to-moderate staphylococcal infections of the respiratory and genitourinary tracts when penicillin-resistant strains have been isolated or are suspected (DE, p. 1181).

DIAGNOSIS CONTRAINDICATIONS: Flag: R3

Review Question: Look ahead in the medical record and indicate if any of the conditions are found.

Contraindications List 1: Absolute Contraindications: None

Contraindications List 2: Consider risk-benefit when:

1. Allergy to any penicillin: Allergic reactions including urticaria, angioedema, and anaphylaxis may follow administration of any penicillin (DE, p. 1167-8, 1182-4).

DRUG CONTRAINDICATIONS: None Flag: R4

MONITORING: None Flag: R5

SULFONAMIDE CODE: 71

INDICATIONS: Flag: R2

Review Question: Indicate if any of the following conditions/diagnoses are in the medical record.

1. Urinary-tract infections: Sulfonamides are among the drugs of choice for treatment of acute, uncomplicated urinary-tract infection (cystitis) (DE, p. 1335).

DIAGNOSIS CONTRAINDICATIONS: Flag: R3

Review Question: Look ahead in the medical record and indicate if any of the conditions are found.

Contraindications List 1: Absolute Contraindications:

1. Allergy to sulfonamides:
   - Hypersensitivity: Reactions including rash, itching, and fever may follow use of sulfonamides (DE, p. 1336).
   - Photosensitivity: Use of sulfonamides may be accompanied by photosensitivity; patients should be cautioned that an exaggerated sunburn may occur during sulfonamide therapy (DE, p. 1336).
   - Severe dermatologic reactions: Sulfonamides may provoke serious skin reaction such as exfoliative dermatitis, toxic epidermal necrolysis, erythema nodosum, and erythema multiforme (DE, p. 1336).
2. G6PD deficiency: Sulfonamides may cause agranulocytosis, leukopenia, thrombocytopenia, hypoprothrombinemia, eosinophilia, and methemoglobinemia. Hemolytic anemia has been seen in patients with and without glucose-6-phosphate dehydrogenase (G6PD) deficiency. This fact should be noted if there is a family history of G6PD deficiency, which is most common in the black and Mediterranean ethnic groups (DE, p. 1336).

Contraindications List 2: Consider risk-benefit when:

3. Impaired renal function: Adequate urine volume must be maintained. Sulfonamides may cause renal toxicity (DE, p. 1336).
4. Hepatic impairment: Hepatitis may follow use of sulfonamides. Patients with hepatic dysfunction may have diminished ability to conjugate sulfonamides, with resultant toxicity (DE, p. 1336).
5. Blood dyscrasias or megaloblastic anemia due to folate deficiency: Sulfonamides may cause agranulocytosis, leukopenia, thrombocytopenia, hypoprothrombinemia, eosinophilia, and methemoglobinemia. Hemolytic anemia has been seen in patients with and without glucose-6-phosphate dehydrogenase (G6PD) deficiency. This fact should be noted if there is a family history of G6PD deficiency, which is most common in the black and Mediterranean ethnic groups (DE, p. 1336).

Sulfonamide (cont'd) CODE: 71

DRUG CONTRAINDICATIONS: Flag: R4

Review Question: Look ahead in the medical record and indicate if any of the drugs are found.

Drug List 1: Absolute Contraindications: None

Drug List 2: Consider risk-benefit when:

1. Oral hypoglycemic agents: Sulfonamides may potentiate the hypoglycemic effect of oral antidiabetic agents (DE, p. 1337).
2. Coumarin anticoagulants: Sulfonamides may enhance the action of these drugs (DE, p. 1337).
3. Methotrexate: Sulfonamides may enhance the action of methotrexate; caution is needed if the two are used simultaneously (DE, p. 1337).
4. Phenytoin: Sulfonamides may prolong the half-life of phenytoin (DE, p. 1337).

Sulfonamide (cont'd) CODE: 71

OLD MONITORING: Flag: R5

Review Question: Indicate whether each monitoring action was done in the time specified.

Monitoring Actions:

Contingent monitoring is required for all patients on long-term therapy (> 1 month) with higher-than-prophylactic doses (1g or more/day or 2 or more doses daily). Note that the time frames specified for monitoring are somewhat arbitrary; for each parameter they reflect the potential rate of change.

If long-term, high-dose therapy:

1. All Patients:

Monitor: CBC
Time Frame: Every month

Rationale: Although the incidence of blood dyscrasias is low, with prolonged sulfonamide therapy, the drug may cause agranulocytosis, anemias, leukopenia, thrombocytopenia, hypoprothrombinemia, eosinophilia, and methemoglobinemia, which may be serious and result in death (DE, p. 1336).

2. All Patients:

Monitor: Urinalysis (crystals)
Time Frame: Every 6 months

Rationale: During long-term therapy, sulfonamides frequently cause crystalluria in the renal calices and pelvis, ureter, or bladder, which may result in hematuria, irritation and/or obstruction (DE, p. 1336, 1347).

3. All Patients:

Monitor: BUN or serum creatinine
Time Frame: Every 6 months

Rationale: Sulfonamides frequently cause crystalluria in the renal calices and pelvis, ureter, ureter, or bladder, and infrequently, toxic nephrosis. During long-term therapy, renal function should be monitored, especially in patients with impaired renal functioning (DE, p. 1336, 1347).

4. Patients on Anticoagulants:

Monitor: Prothrombin time
Time Frame: Every month

Rationale: Sulfonamides may cause thrombocytopenia, prolonging prothrombin time. When combined with anticoagulant drugs, the chance of hemorrhage is increased (DE, p. 1348).

Sulfonamide (cont'd) CODE: 71

NEW MONITORING: Flag: R5

Review Question: Indicate whether each monitoring action was done in the time specified.

Monitoring Actions:

Contingent monitoring is required for all patients on long-term therapy (>1 month) with higher-than-prophylactic doses (1g or more/day or 2 or more doses daily). Note that the time frames specified for monitoring are somewhat arbitrary; for each parameter they reflect the potential rate of change.

If greater than 1 month:

1. All Patients:

Monitor: CBC
Time Frame: Within 1 month of start of therapy

Rationale: Although the incidence of blood dyscrasias is low, with prolonged sulfonamide therapy, the drug may cause agranulocytosis, anemias, leukopenia, thrombocytopenia, hypoprothrombinemia, eosinophilia, and methemoglobinemia, which may be serious and result in death (DE, p. 1336).

2. All Patients:

Monitor: Urinalysis (crystals)
Time Frame: Within 6 months of start of therapy

Rationale: During long-term therapy, sulfonamides frequently cause crystalluria in the renal calices and pelvis, ureter, or bladder, which may result in hematuria, irritation and/or obstruction (DE, p. 1336, 1347).

3. All Patients:

Monitor: BUN or serum creatinine
Time Frame: Within 6 months of start of therapy

Rationale: Sulfonamides frequently cause crystalluria in the renal calices and pelvis, ureter, ureter, or bladder, and infrequently, toxic nephrosis. During long-term therapy, renal function should be monitored, especially in patients with impaired renal functioning (DE, p. 1336, 1347).

4. Patients on Anticoagulants:

Monitor: Prothrombin time
Time Frame: Within 1 week of start of therapy

Rationale: Sulfonamides may cause thrombocytopenia, prolonging prothrombin time. When combined with anticoagulant drugs, the chance of hemorrhage is increased (DE, p. 1348).

5. Patients on Dilantin:

Monitor: Serum levels
Time Frame: Within 1 month of start of therapy

Rationale: Sulfonamides have been reported to enhance the action of phenytoin (DE, p. 1336).

TRIMETHOPRIM-SULFAMETHOXAZOLE

CODE: 72

INDICATIONS:

Flag: R2

Review Question: Indicate if any of the following conditions/diagnoses are in the medical record.

1. Lower-urinary-tract infection: This combination is recommended for urinary-tract infections due to susceptible strains of *Escherichia coli*, *Klebsiella*, *Enterobacter*, *Proteus mirabilis*, *Proteus vulgaris*, and *Morganella morganii* (DE, p. 1344-5).
2. Pyelonephritis: TMP-SMZ is an alternative therapy for acute pyelonephritis (DE, p. 1096).
3. Prophylaxis of urinary-tract infections: Long-term TMP-SMZ is a preferred regimen for prevention of recurrent urinary-tract infection (DE, p. 1344).
4. Sinusitis: TMP-SMZ can be used for treatment of acute sinusitis caused by susceptible strains of *Streptococcus pneumoniae*, *Haemophilus influenzae*, and *Moraxella catarrhalis* when there are advantages over amoxicillin, the usual drug of choice (DE, p. 1345).
5. Chronic bronchitis: TMP-SMZ is an alternative to amoxicillin or tetracycline for exacerbation of bronchitis caused by susceptible strains of *Streptococcus pneumoniae* or *Haemophilus influenzae*. (DE, p. 1345).
6. Chronic prostatitis: TMP-SMZ is a therapy of choice for acute and chronic prostatitis (DE, p. 1345).
7. Otitis media: TMP-SMZ is useful for prophylaxis of chronic otitis media (DE, p. 1345).
8. Shigellosis: TMP-SMZ is a drug of choice for shigellosis caused by susceptible strains (DE, p. 1345).
9. Traveler's diarrhea: TMP-SMZ is effective therapy for this condition and is recommended for severe cases (DE, p. 1345).
10. Salmonellosis, except uncomplicated salmonella gastroenteritis: TMP-SMZ is an effective alternative for treatment of typhoid fever and other salmonelloses as well as for eliminating carriage of Salmonella (DE, p. 1345).

Trimethoprim-Sulfamethoxazole (cont'd) **CODE: 72**

DIAGNOSIS CONTRAINDICATIONS: **Flag: R3**

Review Question: Look ahead in the medical record and indicate if any of the conditions are found.

Contraindications List 1: Absolute Contraindications:

1. Allergy to sulfonamides:
    - Hypersensitivity: Rash is a common adverse effect and may be due to hypersensitivity to the sulfonamide component of TMP-SMZ. More serious hypersensitivity reactions (e.g., erythema multiforme) is rare (DE, p.1347).
    - Photosensitivity: Photosensitivity may follow use of a sulfonamide (DE, p. 1336).
    - Toxic epidermal necrolysis: This syndrome, characterized by redness, blistering, and peeling, is a rare complication of TMP-SMZ therapy (DE, p. 1347).
2. Glucose-6-phosphate dehydrogenase (G6PD) deficiency: Patients with this condition are more likely than others to develop hemolytic anemia as a complication of sulfonamide therapy (DE, p. 1336).

Contraindications List 2: Consider risk-benefit when:

3. Blood dyscrasias or megaloblastic anemia due to folate deficiency:
    - Blood dyscrasias: Leukopenia, thrombocytopenia, eosinophilia, agranulocytosis, bone marrow aplasia, and hemolytic anemia have been reported to follow use of TMP-SMZ (DE, p. 1347).
    - Megaloblastic anemia: This adverse effect may occur in persons prone to folate deficiency, such as alcoholics, malnourished or debilitated patients, and those taking phenytoin or having malabsorption syndrome. Supplemental folic acid prevents this effect (DE, p. 1347).
4. Hepatic impairment: Liver damage (e.g., inflammation, jaundice) is rare but requires discontinuation of TMP-SMZ (DE, p. 1347).
5. Renal impairment: Crystalluria can be avoided by an adequate fluid intake; interstitial nephritis is an uncommon and reversible effect usually involving patients with impaired renal function (DE, p. 1347).

Trimethoprim-Sulfamethoxazole (cont'd) CODE: 72

DRUG CONTRAINDICATIONS: Flag: R4

Review Question: Look ahead in the medical record and indicate if any of the drugs are found.

Drug List 1: Absolute Contraindications: None

Drug List 2: Consider risk-benefit when:

1. Oral antidiabetic agents: TMP-SMZ may potentiate the hypoglycemic effect of oral antidiabetic drugs (DE, p. 1348).

2. Anticoagulants: TMP-SMZ may potentiate the anticoagulant effect of warfarin (DE, p. 1348).

3. Phenytoin: TMP-SMZ prolongs the half-life of phenytoin (DE, p. 1348).

4. Methotrexate: TMP-SMZ enhances the bone marrow depressant effect of methotrexate (DE, p. 1348).

5. Thiazides: Concomitant administration of thiazide diuretics and TMP-SMZ has been associated with thrombocytopenia and hyponatremia (DE, p. 1348).

Trimethoprim-Sulfamethoxazole (cont'd)

CODE: 72

OLD MONITORING:

Flag: R5

Review Question: Indicate whether each monitoring action was done in the time specified.

Monitoring Actions:

Required only for long-term therapy (2 or more times/day for >1 mo); not required for prophylactic use of TMP-SMZ.

If long-term, high-dose therapy:

1. All Patients:

Monitor:	CBC	Rationale: Although the incidence of blood dyscrasias is low, with prolonged sulfonamide therapy, the drug may cause agranulocytosis, anemias, leukopenia, thrombocytopenia, hypoprothrombinemia, eosinophilia, and methemoglobinemia, which may be serious and result in death (DE, p. 1336).
Time Frame:	Every month	

2. All Patients:

Monitor:	Urinalysis (crystals)	Rationale: During long-term therapy, sulfonamides frequently cause crystalluria in the renal calices and pelvis, ureter, or bladder, which may result in hematuria, irritation, and/or obstruction (DE, p. 1336, 1347).
Time Frame:	Within 6 months of start of therapy	

3. All Patients:

Monitor:	BUN or serum creatinine	Rationale: Sulfonamides frequently cause crystalluria in the renal calices and pelvis, ureter, or bladder, and infrequently, toxic nephrosis. During long-term therapy, renal function should be monitored, especially in patients with impaired renal functioning (DE, p. 1336, 1347).
Time Frame:	Within 6 months of start of therapy	

4. Patients on Anticoagulants:

Monitor:	Prothrombin time	Rationale: Sulfonamides may cause thrombocytopenia, prolonging prothrombin time. When combined with anticoagulant drugs, the chance of hemorrhage is increased (DE, p. 1348).
Time Frame:	Within 1 week of start of therapy	

Trimethoprim-Sulfamethoxazole (cont'd) **CODE: 72**

NEW MONITORING: **Flag: R5**

Review Question: Indicate whether each monitoring action was done in the time specified.

Monitoring Actions:

Required only for long-term therapy (2 or more times/day for >1 mo); not required for prophylactic use of TMP-SMZ.

If greater than 1 month:

1. All Patients:

Monitor: CBC
Time Frame: Within 1 month of start of therapy

Rationale: Although the incidence of blood dyscrasias is low, with prolonged sulfonamide therapy, the drug may cause agranulocytosis, anemias, leukopenia, thrombocytopenia, hypoprothrombinemia, eosinophilia, and methemoglobinemia, which may be serious and result in death (DE, p. 1336).

2. All Patients:

Monitor: Urinalysis (crystals)
Time Frame: Within 6 months of start of therapy

Rationale: During long-term therapy, sulfonamides frequently cause crystalluria in the renal calices and pelvis, ureter, or bladder, which may result in hematuria, irritation, and/or obstruction (DE, p. 1336, 1347).

3. All Patients:

Monitor: BUN or serum creatinine
Time Frame: Within 6 months of start of therapy

Rationale: Sulfonamides frequently cause crystalluria in the renal calices and pelvis, ureter, or bladder, and infrequently, toxic nephrosis. During long-term therapy, renal function should be monitored, especially in patients with impaired renal functioning (DE, p. 1336, 1347).

4. Patients on Anticoagulants:

Monitor: Serum levels
Time Frame: Within 1 month of start of therapy

Rationale: Sulfonamides may cause thrombocytopenia, prolonging prothrombin time. When combined with anticoagulant drugs, the chance of hemorrhage is increased (DE, p. 1348).

5. Patients on Dilantin:

Monitor: Serum levels
Time Frame: Within 1 month of start of therapy

Rationale: Sulfonamides have been reported to enhance the action of phenytoin (DE, p. 1336).

Evidence for a New Diagnosis

Patient Id: Diag.: Visit date:

Indicate if any of the following evidence for a new diagnosis is in any note in the medical record: 1=yes 0=no

Look in entire MR.

0◂

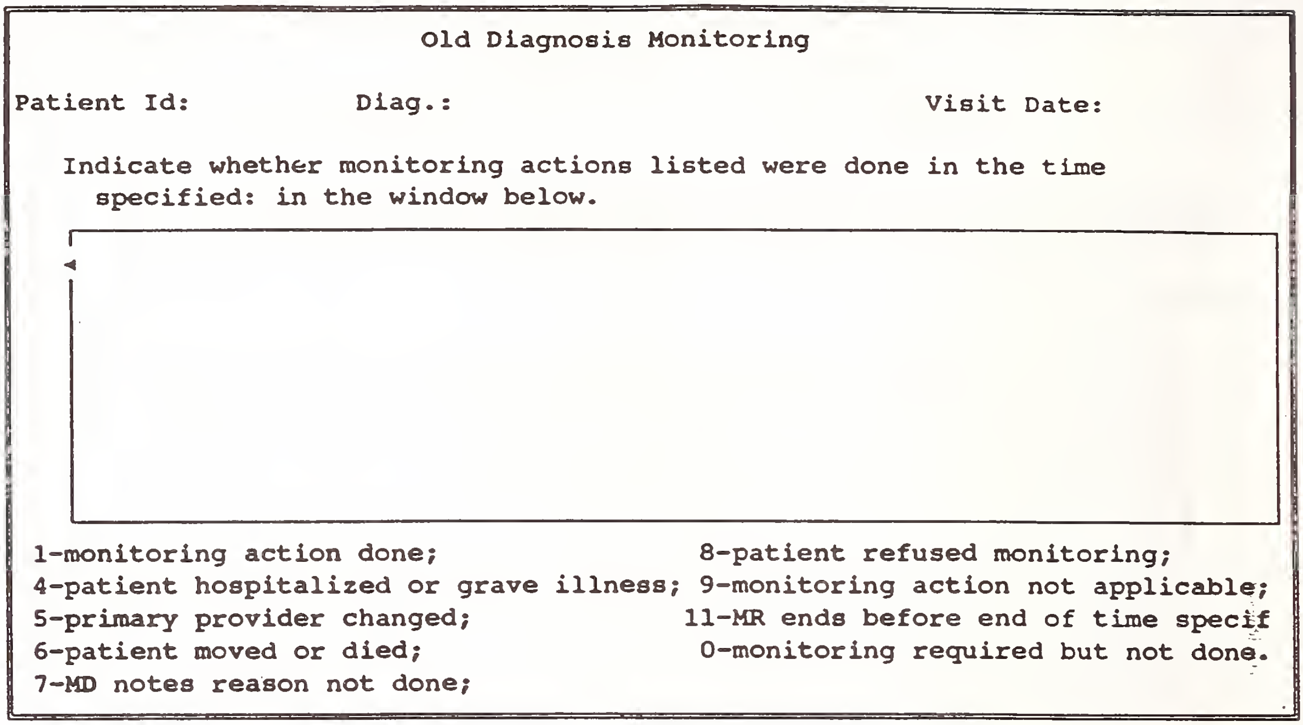
Search for Treatable Causes

Patient Id: Diag.: Visit Date:

Review the medical record and indicate if the following were pre-existing or if workup shown in parentheses was initiated.
Look in MR: six months before to three months after the new DX.

0 ◂

1 - pre-existing cause, or workup done (any result pos. or all neg.)
4 - patient hospitalized or grave illness;
5 - primary provider changed;
6 - patient moved or died;
7 - MD notes reason for not doing tests/exams;
8 - patient refused tests/exams;
11 - MR ends before end of time specified;
0 - none of the above.



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                         Old Diagnosis Monitoring

Patient Id:          Diag.:                                 Visit Date:

   Indicate whether monitoring actions listed were done in the time
     specified: in the window below.

 1-monitoring action done;                   8-patient refused monitoring;
 4-patient hospitalized or grave illness; 9-monitoring action not applicable;
 5-primary provider changed;               11-MR ends before end of time specif
 6-patient moved or died;                    0-monitoring required but not done.
 7-MD notes reason not done;
```

DIAGNOSIS FUNCTION:

HYPERTENSION

CODE: 01

OLD DIAGNOSIS MONITORING:

Flag: D1

Review Question: Indicate whether each monitoring action was done in the time specified.

Monitoring Actions:

EVERY 6 MONTHS:
1. Monitor diet
2. Monitor drug compliance (if applicable)
3. Pulse, blood pressure

History: Because of the importance of diet and drug therapy to successful therapy, the physician should discuss compliance with the recommended regimens at least semiannually (Branch, p. 171; Harrison's, p. 1009).

In addition, it is appropriate to inquire about any illnesses, symptoms, or health concerns that the patient has had since the last visit and about any adverse reactions to drug therapy. All pertinent information should be documented in the record (Culik, p. 40-1).

Physical examination: The pulse rate and blood pressure should be measured and recorded (Culik, p. 41).

Tests: None

YEARLY:
4. Weight
5. Heart examination
6. Lung examination
7. Fundoscopy
8. U/A dipstick for protein

History: As at the semiannual visit, the physician should ask the patient about compliance with diet and drug therapy (Branch, p. 171; Harrison's, p. 1009).

In a more extended conversation, the patient and physician should discuss any symptoms, illnesses, or health problems since the last visit. The physician should ask about any adverse reactions to drug therapy (Culik, p. 40-2). Education of the patient about risk factors and desirable lifestyle changes is an important part of successful management of hypertension (Culik, p. 40).

Physical examination: The annual physical examination should include measurement of weight, pulse, and blood pressure as well as thorough evaluation of the heart and lungs. Fundoscopy should be done to detect any signs of retinopathy, a common sequela of hypertension (Culik, p. 41).

Tests: The urinalysis dipstick test for protein should be done annually; proteinuria, if detected, suggests renal damage (Harrison's, p. 1006).

Hypertension (cont'd) **CODE: 01**

EVIDENCE ESTABLISHING A NEW DIAGNOSIS: **Flag: D2**

Review Question: Indicate if any of the following evidence for a new diagnosis is in any note in the medical record.

1. Diastolic blood pressure: A measurement of ≥90 mm Hg on 2 occasions prior to diagnosis is indicative of hypertension (Culik, p. 4; Branch, p. 163).

   OR

2. Systolic blood pressure: A measurement of ≥140 mm Hg on 2 occasions prior to diagnosis is indicative of hypertension (Culik, p. 4; Branch, p. 163).

   OR

3. Diastolic blood pressure: A single measurement of ≥130 mm Hg is sufficient to establish a diagnosis of hypertension in an elderly person. (Note: Although lower limits are cited in the literature [Culik, p. 4; Goroll, p. 887; Merck, p. 337], DEMPAQ criteria set the cutoff at 130 mm Hg to allow for the physician's discretion on whether to treat an elderly patient).

Hypertension (cont'd) CODE: 01

TREATABLE CAUSES/COMORBIDITIES SOUGHT FOR A NEW DIAGNOSIS: **Flag: D3**

Review Question: Look 6 months before and 3 months after the new diagnosis for the following workup or pre-existing conditions.

If diastolic blood pressure is >105 on at least 2 occasions, look for:

1. Renal disease: Hypertension may be caused by renal disease, suggested by an abnormal BUN or serum creatinine test or by proteinuria (detected by the urinalysis dipstick test) (Branch, p. 173; Harrison's, p. 1008).

   AND

2. Hyperaldosteronism: A low serum potassium level is suggestive of either primary or secondary aldosteronism, which may cause hypertension (Branch, p. 173; Harrison's, p. 1008).

   AND

3. Obesity: Being overweight is a risk factor for hypertension (Culik, p. 16-7; Harrison's, p. 1009).

   AND

4. Alcohol abuse: Epidemiologic data indicate a link between excess alcohol intake and risk of hypertension (Goroll, p. 88); therefore, the physician should ask about alcohol use and counsel limiting the intake to 1 oz of ethanol (2 oz of whiskey, 8 oz of wine, or 24 oz of beer) per day (Culik, p. 17).

   AND

5. Use of hypertension-producing medications: Drugs such as estrogens, long-term high-dose corticosteroids, thyroxin, nonsteroidal anti-inflammatory drugs, and bronchodilators may cause blood pressure elevation (Culik, p. 8; Goroll, p. 94).

ISCHEMIC HEART DISEASE

CODE: 02

OLD DIAGNOSIS MONITORING:

Flag: D1

Review Question: Indicate whether each monitoring action was done in the time specified.

Monitoring Actions:

YEARLY:

1. Stability of symptoms
2. Weight gain
3. Dyspnea
4. Review compliance (diet, drugs, smoking, alcohol)
5. Weight
6. Heart examination
7. Lung examination
8. Pulse, blood pressure

(Note: Although the literature leaves the interval between visits to the physician's discretion, clinical consultants to the DEMPAQ project indicated that annual performance of the items listed would represent minimal care.)

History: At regular visits the physician should ask about symptoms such as chest pain and dyspnea, discuss the importance of weight control and diet (especially if there has been a gain in weight since the last visit), and review medication use and diet as well as use of alcohol and tobacco products, if applicable (Levine, p. 2-3, 37-8; Harrison's, p. 965-7).

Physical examination: The physical examination should include measurement of weight, pulse, and blood pressure, as well as a thorough examination of the heart and lungs (Levine, p. 38; Harrison's, p. 965-6).

Tests: None

EVIDENCE ESTABLISHING A NEW DIAGNOSIS:

Flag: D2

Review Question: Indicate if any of the following evidence for a new diagnosis is in any note in the medical record.

1. Cardiac chest pain: Ischemic heart disease is suggested if chest pain is worse with exercise and relieved by rest and the ECG shows ST segment changes (Levine, p. ii-iii, 6-7; Branch, p. 64-6; Harrison's p.841-3, 855, 966; Merck, p. 354).

   OR

2. Exercise tolerance test: Results of exercise stress-testing can be indicative of ischemic heart disease (Levine, p. 10-12; Goroll, p. 162-6; Harrison's, p. 966; Merck, p. 354).

   OR

3. Cardiac catheterization: If results of noninvasive tests are inclusive, it may be necessary to use cardiac catheterization to establish a diagnosis of ischemic heart disease (Levine, p. ii-iii;12; Harrison's, p. 871-3; 966-7).

Ischemic Heart Disease (cont'd)

CODE: 02

TREATABLE CAUSES/COMORBIDITIES SOUGHT FOR A NEW DIAGNOSIS: Flag: D3

Review Question: Look 6 months before and 3 months after the new diagnosis for the following workup or pre-existing conditions.

1. Hypertension: High blood pressure is a major risk factor for ischemic heart disease (Branch, p. 152; Harrison's p. 964, 967; Merck, p. 354-5).

2. Valvular heart disease: The presence of a murmur on auscultation, history of rheumatic heart disease, or valve disease shown on echocardiogram indicate cardiac valve disease. Aortic stenosis, in particular, can cause angina and ischemic heart disease (Harrison's, p. 946).

   AND

3. Anemia: Severe anemia, as shown by low hematocrit or hemoglobin, is a risk factor for ischemic heart disease (Harrison's, p. 965).

   AND

4. Smoking: Studies have shown that cigarette smoking increases the risk of ischemic heart disease and that smoking cessation lowers the risk (Levine, p. 4,31; Branch, p. 150-2; Merck, p. 355).

   AND

5. Obesity: Obesity is a risk factor for ischemic heart disease, and a patient who is overweight should be strongly encouraged to lose weight through appropriate dieting (Levine, p. 31; Branch, p. 152).

   AND

6. Hypercholesterolemia: A high level of serum cholesterol is a major risk factor for ischemic heart disease. If the serum cholesterol level is high, HDL-cholesterol (and perhaps LDL-cholesterol) should also be measured, and appropriate dietary therapy (possibly with cholesterol-lowering medication) should be instituted (Levine, p. 30-1; Branch, p. 139-46; Harrison's, p. 966, 996-8).

   AND

7. Blood glucose: Diabetes mellitus is an important risk factor for arteriosclerosis and ischemic heart disease. Therefore, the blood glucose level should be checked periodically in a patient with ischemic heart disease who may be at risk of developing diabetes (Levine, p. 31-2; Branch, p. 144; Harrison's, p. 966).

OSTEOARTHRITIS

CODE: 03

OLD DIAGNOSIS MONITORING:

Flag: D1

Review Question: Indicate whether each monitoring action was done in the time specified.

Monitoring Actions:

YEARLY:

1. Control of symptoms
2. Examination of joints most affected
3. Weight
4. Side effects of medications

History: DEMPAQ criteria require that the physician discuss control of symptoms and medication use with patient (Olson, p. 22; Goroll, p. 698-9). In addition, the patient should be asked about any changes in symptoms or functional capacity and occurrence of acute episodes since the last visit. It is also important to inquire about compliance with exercise and weight reduction regimens (if applicable); excess weight can aggravate OA and should be avoided. Because of possible adverse effects of drugs used to treat OA, it is essential to monitor drug therapy and the latter's possible adverse effects (Olson, p. 22). The physician should encourage the patient to discuss any health concerns that he/she may have (Olson, p. 22; Goroll, p. 698-9; Robinson, p. 7-8).

Physical examination: A brief general examination should include recording weight and appropriate observation of the musculoskeletal system. The number of joints involved and any swelling should be noted (Olson, p. 22; Goroll, p. 696-7).

Tests: None

Osteoarthritis (cont'd) CODE: 03

EVIDENCE ESTABLISHING A NEW DIAGNOSIS: **Flag: D2**

Review Question: Indicate if any of the following evidence for a new diagnosis is in any note in the medical record.

1. Symptoms: Diagnosis can be established by the presence of symptoms suggestive of osteoarthritis and lasting >1 month (e.g., gradual onset of joint pain and limitation of movement worsened by use, asymmetrical involvement, especially of the hip, knee, spine, and fingers, without joint inflammation or fever (Olson, p. 8, 9; Harrison's, p. 1479).

   OR

2. X-ray findings: Diagnosis can be established by x-ray findings indicative of osteoarthritis (Merck, p. 690). Major radiographic findings are asymmetric loss of cartilage, reactive sclerosis and osteophyte formation, and cysts of subchrondral bone rather than marginal erosions (Branch, p. 860).

TREATABLE CAUSES/COMORBIDITIES SOUGHT FOR A NEW DIAGNOSIS: **Flag: D3**

Review Question: Look 6 months before and 3 months after the new diagnosis for the following workup or pre-existing conditions.

1. Obesity: If the patient is obese (weight for height), weight reduction may be helpful (Harrison's, p. 1479). Frequent visits or telephone contacts may be needed to monitor compliance with a weight-reduction program (Olson, p. 22).

CHRONIC OBSTRUCTIVE PULMONARY DISEASE

CODE: 04

OLD DIAGNOSIS MONITORING:

Flag: D1

Review Question: Indicate whether each monitoring action was done in the time specified.

Monitoring Actions:

YEARLY:

1. Compliance with smoking cessation (if patient a smoker)
2. Pulse, respiratory rate
3. Lung examination
4. Chest x-ray
5. Blood pressure
6. Tolerance of exertion

History: The DEMPAQ criteria require that the physician inquire about smoking cessation (if patient is a smoker) and exercise tolerance (Johanson, p. 35; Branch, p. 323-5).

It is also prudent to seek information about any changes in condition and symptoms, including cough, dyspnea, wheezing, tolerance of exertion, illnesses since the last visit, and compliance with treatment recommendations such as medication use, diet, exercise, and oxygen therapy. To manage a patient with COPD successfully, the physician should see him/her often enough to monitor pulmonary status and provide appropriate education (Johanson, p. 35; Branch, p. 323-5; Goroll, p. 216-20).

Physical examination: Measurements to be recorded include pulse and respiration rates, weight, and blood pressure. The heart and lungs should be examined thoroughly, and any evidence of edema should be noted (Johanson, p. 35; Goroll, p. 216.).

Tests: A chest x-ray is an important means of checking for pneumonia in patients with exacerbations of disease. Chest x-rays can also give information about the presence of CHF or hyperinflation; changes in vascular markings may also be noted (Scientific American, p. 11). Intervals between chest x-rays depend on the patient's condition (Johanson, p. 35).

Chronic Obstructive Pulmonary Disease (cont'd) CODE: 04

EVIDENCE ESTABLISHING A NEW DIAGNOSIS: **Flag: D2**

Review Question: Indicate if any of the following evidence for a new diagnosis is in any note in the medical record.

1. Productive cough: COPD is indicated if the patient has a productive cough (Merck, p. 446) lasting 3 or more months in 2 consecutive years.

   AND

2. Dyspnea: The presence of dyspnea on exertion (with or without wheezing) is suggestive of COPD (Harrison's, p. 975; Merck, p. 446).

   OR

3. Decreased FEV1: Decreased forced expiratory volume (1 sec) that is <60% of the total forced expiratory volume or forced vital capacity (FVC). (Note: Although the literature [Merck, p. 448; Goroll, p. 215] sets the limit of 80% of FEV1, the DEMPAQ project uses 60% because below this level many patients have exertional dyspnea [Harrison's, p. 1077]).

TREATABLE CAUSES/COMORBIDITIES SOUGHT FOR A NEW DIAGNOSIS: **Flag: D3**

Review Question: Look 6 months before and 3 months after the new diagnosis for the following workup or pre-existing conditions.

1. Smoking or environmental precipitants: History of tobacco use or occupational exposure are major risk factors for COPD (Johanson, p. 5; Merck, p. 445). The smoker should be asked about smoking habits and counseled about smoking cessation (Johanson, p. 4, 16). If the patient's environmental exposure is related to job, household causes, or hobby, the physician should explore with the patient any possible ways to avoid or minimize exposure (Goroll, p. 216-7).

DIABETES

CODE: 05

OLD DIAGNOSIS MONITORING:

Flag: D1

Review Question: Indicate whether each monitoring action was done in the time specified.

Monitoring Actions:

EVERY 6 MONTHS:
1. Comment on blood glucose control
2. Weight, pulse, blood pressure
3. HgbA1C or fructosamine
4. Urinalysis dipstick for protein and microscopic examination of sediment
5. Blood glucose
6. Document dietary compliance
7. Heart examination, leg and foot examination
8. Fundoscopy

History: DEMPAQ criteria require that the physician ask about and comment on control of blood glucose levels and about proper use of diet and medications to achieve control (Allerheiligen, p. 38-9; Branch, p. 780-1).

Education and cooperation of the patient are essential to therapy of diabetes. Therefore, it is helpful if at each visit the physician reviews the patient's recent experience with home glucose monitoring and urine testing. Discussion of diet and other health concerns with the patient (and sometimes with the family) is also helpful (Branch, p. 780-1).

Physical examination: Weight, pulse, and blood pressure should be measured (Allerheiligen, p. 37; Goroll, p. 482).

Tests: Urinalysis should include a dipstick test for protein and microscopic examination of urine sediment (Goroll, p. 482). The hemoglobin A1C test (or fructosamine test) on venous blood should also be done (Goroll, p. 482). (Note: Although the ABFP Guidelines suggest quarterly monitoring of the hemoglobin A1C levels, the criteria specify semiannual monitoring to allow for the facts that patients with mild or well-controlled diabetes may need less frequent monitoring and that some patients, regardless of health status, may be unable to visit the physician every 2-3 months.)

YEARLY:
1. Document dietary compliance
2. Heart examination, leg and foot examination
3. Fundoscopy

History: Compliance with the recommended diet should be discussed and documented in the medical record (Allerheiligen, p. 39; Branch, p. 781; Merck, p. 794-5).

Physical examination: The annual physical examination should include a cardiovascular evaluation, with emphasis on detection of vascular complications of diabetes (Goroll, p. 482). Because of the risk of peripheral circulatory problems, the legs and feet should be examined (Allerheiligen, p. 37; Branch, p. 782). DEMPAQ criteria recommend annual fundoscopy to detect retinopathy, a common complication of diabetes, although other authors (Goroll, p. 482) suggest fundoscopy twice each year.

Diabetes (cont'd) CODE: 05

EVIDENCE ESTABLISHING A NEW DIAGNOSIS: Flag: D2

Review Question: Indicate if any of the following evidence for a new diagnosis is in any note in the medical record.

1. Nonfasting blood glucose level: DEMPAQ criteria set a blood glucose level of >250 mg/dL plus weight loss in the presence of normal appetite or excessive fluid intake or urine volume (Merck, p. 792) as diagnostic for diabetes. (Note: Although some authors adopt a cutoff blood glucose level of >200 mg/dL [Harrison's, p. 1747; Merck, p. 792], the DEMPAQ project set a higher cutoff to account for increased levels with aging and the uncertainty about the diagnostic threshold [Sox, p. 123-8]).

   OR

2. Fasting blood glucose level: Two separate fasting blood glucose levels of >140 mg/dL indicate diabetes (Allerheiligen, p. 36; Merck, p. 793; Harrison's, p. 1739).

   OR

3. Oral glucose tolerance test: Blood glucose levels of >250 mg/dL during this test (both at 2 hours and at some point between time zero and 2 hours) indicate diabetes. (Note: Although the value of 200 mg/dL is recommended in the literature [Merck, p. 293], DEMPAQ criteria use 250 mg/dL as the cutoff because of normal increases with aging and controversy about the diagnostic threshold [Sox, p. 123-8]).

TREATABLE CAUSES/COMORBIDITIES SOUGHT FOR A NEW DIAGNOSIS: Flag: D3

Review Question: Look 6 months before and 3 months after the new diagnosis for the following workup or preexisting conditions.

1. Steroids: Use of glucocorticoids (e.g., cortisone, hydrocortisone, prednisolone, methylprednisolone, prednisone, triamcinolone, betamethasone, dexamethasone) may cause hyperglycemia or increase the need for hypoglycemic drugs (DE, p. 1627-33; Harrison's, p. 375).

CONGESTIVE HEART FAILURE

CODE: 06

OLD DIAGNOSIS MONITORING:

Flag: D1

Review Question: Indicate whether each monitoring action was done in the time specified.

Monitoring Actions:

YEARLY:
1. Chest pain
2. Dyspnea, decreased tolerance of exertion
3. Document drug treatment
4. Weight (or history of weight gain)
5. Pulse, blood pressure
6. Heart examination
7. Peripheral edema
8. Lung examination

History: At least once each year, the physician should ask whether the patient has had chest pain or dyspnea or has noticed decreased tolerance of exertion. The patient should be asked about compliance with drug treatment and the response should be documented in the record (Nong, p. 5-10).

In reviewing the patient's cardiac status since the last visit, it is important to distinguish noncardiac from cardiac causes of any intercurrent episodes of heart failure. For example, certain vitamin deficiency states (e.g., beriberi or thiamine deficiency) may cause heart failure. In addition, a number of drugs frequently used by the elderly may cause or aggravate heart failure. The physician should be aware that cognitive impairment, which may be an effect of severe heart failure, can be an impediment to obtaining a reliable history (Nong, p. 5-8; Harrison's, p. 437).

It is important to discuss life-style factors that may affect cardiac status (e.g., diet, salt intake, stress and activity levels) and to explore with the patient realistic ways to minimize potential problems (Nong, p. 5-10, 31; Branch, p. 128; Goroll, p. 136, 141-2).

Physical examination: The patient should be weighed at each visit and the current weight compared to that recorded at the previous visit. The pulse and blood pressure should be recorded, with assessment of significant changes from previous levels. The heart and lungs should be thoroughly examined, and the presence of arrhthymia or rales should be noted. The physician should look for evidence of edema which, while not in itself a reliable indicator of heart failure, is a frequent sign (Nong, p. 9, 30; Branch, p. 128; Merck, p. 382).

Tests: None

Congestive Heart Failure (cont'd) **CODE: 06**

EVIDENCE ESTABLISHING A NEW DIAGNOSIS: **Flag: D2**

Review Question: Indicate if any of the following evidence for a new diagnosis is in any note in the medical record.

1. Physiologic signs of CHF: An S3 or early diastolic gallup usually signals the presence of CHF. Pulmonary rales may be present in the patient with CHF. Increased jugular venous pressure (at rest or with pressure over the abdomen) is also characteristic of heart failure. Ankle edema, often present in patients with CHF, may also be due to other causes such as renal disease or varicose veins. Cardiac enlargement is another common sign of heart failure (Nong, p. 5-12; Branch, p. 128-9; Harrison's, p. 893-4; Merck, p. 382).

   OR

2. Left ventricular ejection fraction <40%: The normal left ventricle ejects 50-80% of its end-diastolic volume with each contraction. Elderly patients with CHF may have normal or slightly reduced ejection fractions. This objective measure of ventricular function is often needed to confirm the diagnosis of CHF (Harrison's p. 874; Merck, p. 382).

   OR

3. Radiographic signs of CHF: A chest x-ray can provide information on underlying cardiac abnormalities as well as on the status of cardiac failure. The film should also be examined for signs of pulmonary problems (Nong, p. 11; Branch, p. 129).

Congestive Heart Failure (cont'd) CODE: 06

TREATABLE CAUSES/COMORBIDITIES SOUGHT FOR A NEW DIAGNOSIS: **Flag: D3**

Review Question: Look 6 months before and 3 months after the new diagnosis for the following workup or pre-existing conditions.

Any one of the following conditions may cause heart failure. Since they can often be successfully managed surgically or pharmacologically, it is important to look for their presence and to treat appropriately.

1. Hypertension: Systemic hypertension is a common precipitating cause of CHF. Pharmacologic treatment can often reverse the cardiac failure (Nong, p. 6; Branch, p. 125; Harrison's, p. 891).

   AND

2. Valvular heart disease: Abnormalities such as mitral stenosis or aortic regurgitation can result in CHF (Nong, p. 6; Branch, p. 125; Harrison's, p. 890-2).

   AND

3. Myocardial infarction: An infarct may lead to CHF, particularly in a patient with existing but compensated ischemic heart disease (Nong, p. 6; Branch, p. 126).

   AND

4. Pharmacologic causes: Drugs such as beta-blockers, calcium channel blockers, peripheral alpha blockers, adrenergic neuron blockers, and direct-acting vasodilators, which are often taken by elderly patients with heart disease or related conditions, may play a role in the etiology of CHF (Nong, p. 8; see also criteria documentation for above-named drugs).

   AND

5. Anemia: Severe anemia is among the treatable, noncardiac causes of CHF (Nong, p. 5; Harrison's, p. 809-11).

   AND

6. Other possible causes of CHF: The physician should investigate and note in the record whether any of the following possible causes of CHF are present: thyroid disease, atrial fibrillation, skeletal muscle tremor, and excessive environmental stress such as heat or humidity (Nong, p. 6; Branch, p. 125-6; Harrison's, p. 891).

Test Response

Patient ID: Test: Visit Date:

Now look ahead in the medical record and indicate if there is evidence that the action, sequence of actions, or referral described in the following paragraph was initiated in the time specified.

Look ahead: time shown in window

0 ◄ ☐

1-specified action done;
2-referral after treatment or retest;
3-referral made without retest;
4-pt hospitalized or grave illness;
5-primary provider changed;
6-patient moved or died;
7-MD notes reason action not taken;
8-patient refused action specified;
11-MR ends before end of time spcfied;
0-none of the above

Test Urgent Response

Patient ID: Test: Visit Date:

Indicate if an immediate response shown below was required and done within 24 hours of test results.

Look ahead: to next visit note.

9 ◄ ☐

1 - hospitalization;
2 - specified referral;
3 - other referral;
6 - patient moved or died;
7 - MD notes reason action not taken;
8 - patient refused action required;
9 - not required;
11 - MR ends before end of time specified
0 - required but not done.

Test Indications (continued)

Patient ID: Test: Visit Date:

Indicate if any of the conditions, symptoms or drugs shown below are found in the medical record. Only one condition is needed. 1=yes; 0=no

Look in entire MR.

0◂ ☐

TESTS FUNCTION:

BLOOD PRESSURE - Diastolic Blood Pressure ≥90 CODE: 01

DIAGNOSTIC/COMPLAINT/DRUG MONITORING INDICATIONS: **Flag: T1**

Review Question: Indicate if any of the following conditions, symptoms, or drugs are in medical record.

1. Hypertension: The patient with hypertension should have routine monitoring of blood pressure measurements at intervals appropriate to level of blood pressure, adherence to therapy, and associated medical problems (Culik, p. 41).

2. Coronary artery disease: Hypertension is a major risk factor for coronary artery disease and associated morbidity and mortality (Harrison's, p. 967; Merck, p. 1117); therefore, patients with this condition should have frequent blood pressure monitoring so that therapy can be considered if hypertension is present.

3. Renal disease: Renal disease may cause hypertension; therefore, patients with any form of kidney impairment or disease should have frequent blood pressure monitoring (Branch, p. 178-9; Culik, p. 11-13, 37). Renal disease may also result from hypertension; this is another reason to monitor and control hypertension (Harrison's, p. 1003-5).

4. Diabetes: Since diabetic patients are at risk for hypertension, blood pressure should be measured and recorded at each visit to the primary care physician (Allerheiligen, p. 37).

5. Estrogen use: A small rise in blood pressure during use of estrogen-containing oral contraceptives is common; however, a small but significant proportion of women using these drugs develop hypertension (Harrison's, p. 1792). Therefore, periodic blood pressure monitoring is recommended.

6. Ethanol abuse: Epidemiologic evidence suggests a link between hypertension and excess consumption of alcohol; thus the ethanol abuser should have blood pressure measurements at each visit to a health care provider (Goroll, p. 88; Merck, p. 345).

7. Steroid use: Since use of corticosteroids may increase blood pressure, the patient taking these drugs should have careful monitoring of blood pressure (DE, p. 1626).

8. Use of nonsteroidal anti-inflammatory drugs: Several of the NSAIDs (e.g., diclofenac and ibuprofen) may cause edema and increased blood pressure; therefore, patients taking these drugs for prolonged periods should have blood pressure monitoring (DE, p. 1706, 1708).

9. Use of bronchodilators: Some bronchodilators, particularly epinephrine, can affect the cardiovascular system or cause blood pressure increases. Patients using drugs of this type should have frequent blood pressure checks (DE, p. 436, 445).

DRUGS: Bronchodilators, corticosteroids, estrogen, ethanol, nonsteroidal anti-inflammatory agents

SCREENING: Indicated for all patients.

Blood Pressure - Diastolic Blood Pressure ≥90 (cont'd) **CODE: 01**

TRIGGER VALUE REQUIRING IMMEDIATE TRANSFER TO HOSPITAL/ER: **Flag: T2**

Review Question: Indicate if an immediate response shown below was required and done within 24 hours of test results.

1. If patient not previously known to be hypertensive: diastolic blood pressure >130

2. If patient a known hypertensive already on treatment: diastolic blood pressure >140

TEST VALUE RANGES REQUIRING TREATMENT OR WORKUP: **Flag: T3**

Review Question: Look ahead in the record and indicate if there is evidence that the sequence of actions below was initiated in the time specified.

Result Range:

1. Diastolic blood pressure 90-104 on at least 2 occasions as a new finding:

   Treat with no added salt, weight reduction, lower alcohol intake. If on hypertension-producing medication,* decrease or discontinue. Retest within 2 months.

   Time Frame: 1 week

   Rationale: In a patient without a history of hypertension, nonpharmacologic treatment may be enough to control diastolic blood pressure in some patients (Merck, p. 345).

2. Diastolic blood pressure 105-114 on at least 2 occasions as a new finding:

   Treat as for Range 1 OR institute Step 1 drug therapy (see below). Retest within 1 month.

   Time Frame: 1 week

   Rationale: Nonpharmacologic treatment may be enough to control diastolic blood pressure in some individuals. Other patients may respond to antihypertensive drugs taken in submaximal doses. This concept of "stepped care" is the current advocated approach to the treatment of hypertension (Merck, p. 345).

3. Diastolic blood pressure 115-130 on at least 2 occasions as a new finding:

   Initiate therapy with 1 or more antihypertensive medication measures. Retest within 2 weeks.

   Time Frame: 1 day

   Rationale: Patients whose diastolic blood pressure is in this range should be started on antihypertensive medication. Drugs should be added sequentially, lower doses at first, progressing to increased doses and additional antihypertensive agents as necessary. This concept of "stepped care" is the current advocated approach to the treatment of hypertension (Merck, p. 345).

(cont'd)

Blood Pressure - Diastolic Blood Pressure ≥90 (cont'd) **CODE: 01**

TEST VALUE RANGES REQUIRING TREATMENT OR WORKUP: (cont'd) T3

Review Question: Look ahead in the record and indicate if there is evidence that the sequence of actions below was initiated in the time specified.

Result Range:

4. Diastolic blood pressure 90-104 and previously abnormal:

   Reaffirm treatment (e.g., reduce weight and salt intake). Add, increase, or substitute medications, unless patient not complying with current regime. Retest within 3 months. If not controlled within 6 months and not already on 2-drug therapy, request consultation OR referral.

   Time Frame: 1 week

   Rationale: A patient with a history of hypertension whose diastolic blood pressure exceeds 90 mm Hg, needs further treatment and follow-up (Harrison's, p. 1008). The treatment goals and regimen should be reaffirmed with the patient. The goal of therapy is to control blood pressure as low as possible without side effects from medication (Branch, p. 164).

5. Diastolic blood pressure >105 and previously abnormal:

   Add, increase, or substitute medications (or note to consider this after retest). Check compliance. Retest within 3 months. If not controlled within 6 months and not on a 2- or 3-drug therapy, request consultation OR referral.

   Time Frame: 1 day

   Rationale: A patient with a history of hypertension whose diastolic blood pressure exceeds 90 mm Hg, needs further treatment and follow-up (Harrison's, p. 1008). Drugs should be added sequentially, lower doses at first, progressing to increased doses and additional antihypertensive agents as necessary. This concept of "stepped care" is the current advocated approach to the treatment of hypertension (Merck, p. 345).

6. Diastolic blood pressure >105, previously abnormal, and already on 3-drug therapy for greater than 3 months:

   Referral or workup initiation required. Workup may include intravenous pyelogram, renal scan, thyroid function, cortisol, arteriograms with pigtail catheters. Retest within 3 months. If not controlled within 3 months, request consultation OR referral.

   Time Frame: 1 day

   Rationale: If treatment has progressed through the currently accepted "stepped care" approach and the patient is taking three drugs, a detailed search for a secondary cause of hypertension is indicated (Harrison's, p. 1013).

* Hypertension-producing drugs: Estrogens, long-term high-dose corticosteroids, thyroxin, NSAIDs, bronchodilators

STEPPED-CARE APPROACH TO DRUG THERAPY

STEP 1

Begin with less than a full dose of

Thiazide-type diuretic

OR

Beta-adrenergic receptor blocker

OR

ACE inhibitor

OR

Calcium channel blocker

STEP 2

Proceed to full dose of Step 1 choice

OR

Add a second agent from Step 1 choices

OR

Use an alternative agent

STEP 3

Add a third agent

OR

Proceed with full doses of the two Step 2 choices

OR

Select an alternative Step 1 agent

Source: The 1988 Joint National Committee. The 1988 Report of the Joint National Committee on Detection, Evaluation, and Treatment of High Blood Pressure. Arch Intern Med 1988;148:1023-1038.

HEMOGLOBIN/HEMATOCRIT

CODE: 02

DIAGNOSTIC/COMPLAINT/DRUG MONITORING INDICATIONS: Flag: T1

Review Question: Indicate if any of the following conditions, symptoms, or drugs are in medical record.

1. Anemia: The concentration of hemoglobin in blood and the hematocrit are the primary measurements to detect anemia (U.S. Preventive Services Task Force, p. 164).

2. Blood loss: Since significant loss of blood can lead to depletion of hemoglobin and red cells, hemoglobin and hematocrit should be determined for any patient who has had serious bleeding (Merck, p. 17).

3. Coronary artery disease/hypertension: For the patient with coronary artery disease, both the diagnostic workup and follow-up evaluations should include hemoglobin and hematocrit measurements (Levine and Nong, p. 10, 37). These tests should also be part of the diagnostic workup for the patient with hypertension (Culik et al., p. 11).

4. Chronic renal failure: Chronic renal failure may lead to anemia (Merck, p. 648); therefore, these patients should be monitored with periodic hemoglobin and hematocrit measurements.

5. Polycythemia (primary/secondary from low pO_2): The elevated red cell mass and hemoglobin concentration of polycythemia can lead to cardiac and other complications; the hemoglobin and hematocrit tests are important for both diagnosis and monitoring (Branch, p. 807-10; Harrison's, p. 1563-5).

6. Melena or stool positive for occult blood: Gastrointestinal bleeding can lead to low hematocrit and hemoglobin levels; these should be measured for patients who have had GI bleeding (Merck, p. 17).

7. Fatigue: Fatigue is a common symptom of anemia; the patient who complains of fatigue should have hemoglobin and hematocrit tests as part of an evaluation (Branch, p. 799).

8. Decreasing tolerance of exertion or shortness of breath: These may be symptoms of severe anemia; the patient with these symptoms, therefore, should have both hemoglobin and hematocrit measurements (Branch, p. 799; Harrison's, p. 344).

9. Symptoms of infections: This item emerged from the criteria development process but has not been verified.

(cont'd)

Hemoglobin/Hematocrit (cont'd) **CODE: 02**

DIAGNOSTIC/COMPLAINT/DRUG MONITORING INDICATIONS: (cont'd) **Flag: T1**

Review Question: Indicate if any of the following conditions, symptoms, or drugs are in medical record.

10. Aspirin use: Because aspirin use can cause GI bleeding (DE, p. 1702, 1704), the patient using aspirin long-term should have periodic hematocrit measurements.

11. NSAID use: Like aspirin, NSAIDs can cause GI bleeding (DE, p. 1702; Allison, p. 749-54). Therefore, long-term use of NSAIDs should be accompanied by monitoring of hemoglobin and hematocrit levels.

12. Gastrointestinal disease: GI-tract diseases (e.g., cancer) can cause bleeding (Harrison's, p. 1221), which, in turn, may lead to anemia. These patients should have their hemoglobin and hematocrit levels monitored.

13. Concern about nutrition, self-care: Iron-deficiency anemia due to poor nutrition is uncommon in older persons; however, vitamin B_{12} or folate deficiency may cause macrocytic anemia (Merck, p. 645-6). Thus, if the physician is concerned about the patient's nutritional status, periodic monitoring of hematocrit and/or hemoglobin is warranted.

SCREENING: Appropriate on initial visit.

TRIGGER VALUE REQUIRING IMMEDIATE TRANSFER TO HOSPITAL/ER: **Flag: T2**

Review Question: Indicate if an immediate response shown below was required and done within 24 hours of test results.

1. New finding of hemoglobin ≤ 6 g/dL or hematocrit $\leq 18\%$ and symptomatic (breathlessness or chest pain or heart failure or acute hemorrhage).

Hemoglobin/Hematocrit (cont'd) CODE: 02

TEST VALUE RANGES REQUIRING TREATMENT OR WORKUP: Flag: T3

Review Question: Look ahead in the record and indicate if there is evidence that the sequence of actions below was initiated in the time specified.

Result Range:

1. Hemoglobin <10 g/dL or hematocrit <30% and mean corpuscular volume <82 cubic micrometers/cell:

   Check RBC indices and peripheral smear. If mean corpuscular volume <82 cubic micrometers/cell, then enquire as to obvious blood loss AND check iron/total iron-binding capacity OR check serum ferritin or therapeutic trial of iron.* THEN if no obvious source of blood loss, check stool for occult blood. IF iron deficiency proven, proceed to workup within 3 months with sigmoidoscopy and colonoscopy OR barium enema and upper GI series OR upper GI endoscopy.

   Time Frame: 1 week

   Rationale: Microcytic anemia is a symptom of disease, and further tests should be conducted to determine cause. Measurement of total iron-binding capacity may help establish the presence of a chronic condition. Measurement of serum ferritin estimates bone marrow iron stores. A trial of oral iron with improvement of anemia indicates iron deficiency. If none of the above is diagnostic of source of anemia, an occult blood should be done to test for bleeding in the gastrointestinal track (Merck, p. 647).

2. Hemoglobin <10 g/dL or hematocrit <30% and mean corpuscular volume 82-98 micrometers/cell:

   Check RBC indices and peripheral smear. If mean corpuscular volume 82-98 micrometers/cell then check iron/total iron-binding capacity OR ferrin AND check BUN/creatinine and review results within 2 weeks.

   Time Frame: 1 week

   Rationale: The most common normocytic anemia is caused by chronic disease. Measurement of total iron-binding capacity may help establish the presence of a chronic condition. Measurement of serum ferritin estimates bone marrow iron stores. BUN or creatinine should be done to determine renal functioning, since renal insufficiency is a possible cause of normocytic anemia (Merck, p. 648).

(cont'd)

Hemoglobin/Hematocrit (cont'd) **CODE: 02**

TEST VALUE RANGES REQUIRING TREATMENT OR WORKUP: (cont'd) **Flag: T3**

Review Question: Look ahead in the record and indicate if there is evidence that the sequence of actions below was initiated in the time specified.

Result Range:

3. Hemoglobin <10 g/dL or hematocrit $<30\%$ and mean corpuscular volume >98 micrometers/cell:

   Check RBC indices and peripheral smear. Check history of chronic alcohol use, check B12, folate, and review results within 2 weeks.

   Time Frame: 1 week

   Rationale: Macrocytic anemia is usually caused by chronic liver disease (common with a history of alcohol use) or vitamin B12 or folate deficiency. Accurate diagnosis of cause of macrocytic anemia is important because conditions can be treated (Merck, p. 654).

4. Hemoglobin >18 g/dL or hematocrit $>54\%$:

   Check arterial pO_2 and renal ultrasound and review results within 1 month OR request consultation OR referral to hematologist.

   Time Frame: 1 month

   Rationale: Diagnosis of mechanism causing polycythemia includes monitoring pO_2 to determine if severe chronic hypoxemia is cause of polycythemia. In the absence of other causes, renal functioning for inappropriate erythropoietin production should be evaluated (Branch, p. 808).

* Therapeutic trial = iron therapy for 2 weeks and repeat hemoglobin/hematocrit which shows improved anemia with physician note confirming diagnosis of iron deficiency.

CHOLESTEROL - Total Cholesterol >240

CODE: 03

DIAGNOSTIC/COMPLAINT/DRUG MONITORING INDICATIONS: Flag: T1

Review Question: Indicate if any of the following conditions, symptoms, or drugs are in medical record.

1. Familial hypercholesterolemia: This inherited disease is a major risk factor for ischemic heart disease. Affected individuals should have a diet low in saturated fats, with monitoring of the cholesterol level (Harrison's, p. 1820-2).
2. Ischemic heart disease: Elevated serum cholesterol is a risk factor for acute myocardial infarction (Goroll et al., p. 42). The American College of Physicians (Hayward et al., p. 769) and the ABFP (Levine, p. 37) recommend frequent or appropriately timed cholesterol tests for patients with ischemic heart disease. Frequency of testing depends on past cholesterol levels and other factors in the patient's history and status.
3. Hypertension: Discretionary monitoring of total cholesterol in the patient with hypertension provides information on an additional risk factor for ischemic heart disease and guidance for management (Culik, p. 11).
4. Medications (thiazides and beta-blockers): Short-term therapy with thiazide diuretics may increase total serum cholesterol and LDL-cholesterol levels, but these tend to return to normal during long-term therapy (DE, p. 693). Beta-blockers may reduce HDL-cholesterol levels, but therapy with these drugs does not prevent the increase in HDL cholesterol induced by exercise (DE, p. 473).
5. Diabetes: Total cholesterol should be tested annually in diabetics because they have an increased risk of atherosclerosis and ischemic heart disease (ADA, p. 367; Harrison's, p. 1733).

SCREENING: Permissible once in a 2-year period.

TRIGGER VALUE REQUIRING IMMEDIATE TRANSFER TO HOSPITAL/ER: None Flag: T2

Cholesterol - Total Cholesterol >240 (cont'd) CODE: 03

TEST VALUE RANGES REQUIRING TREATMENT OR WORKUP: **Flag: T3**

Review Question: Look ahead in the record and indicate if there is evidence that the sequence of actions below was initiated in the time specified.

Result Range:

1. Total cholesterol >240 mg/dL and new abnormality:

   Retest, and if still ≥240 mg/dL, start with diet advice. Retest within 6 months.

   Time Frame: 3 months

   Rationale: Any abnormal blood cholesterol level on the first screening should be validated with an additional test. Treatment for patients at moderate risk should be primarily dietary counseling (Merck, p. 851).

2. Total cholesterol >240 mg/dL and old abnormality:

   Check fasting HDL, total cholesterol and triglycerides, blood glucose, and thyroid function. Retest patient within 4 months. If patient ≤75 years of age and if value remains high, check dietary compliance.

   Time Frame: 3 months

   Rationale: Fasting HDL, total cholesterol and triglyceride levels will help to determine the level of the patient's risk. Other tests should be conducted to assist in identifying the cause of the elevated cholesterol level (Merck, p. 863).

POTASSIUM (SERUM LEVEL) CODE: 04

DIAGNOSTIC/COMPLAINT/DRUG MONITORING INDICATIONS: Flag: T1

Review Question: Indicate if any of the following conditions, symptoms, or drugs are in medical record.

1. Diuretic therapy: Close monitoring of serum potassium is necessary for patients receiving diuretics (Harrison's, p. 1010).

2. Digoxin therapy: Monitoring of serum potassium is indicated for patients receiving both digitalis and diuretics; potassium depletion may cause digitalis intoxication (Sox, p. 435; Harrison's, p. 898-9).

3. Potassium therapy: Patients receiving potassium therapy should have repeated measurements of serum potassium and clinical evaluation (Harrison's, p. 287).

4. Heart disease: Monitoring of serum potassium is indicated for patients with congestive heart failure or hypertension who are receiving diuretics (Harrison's, p. 1010), digitalis (Sox, p. 435), or ACE inhibitors (DE, p. 488) or those being treated for cardiac arrhythmias (Sox, p. 435).

5. Renal disease: Patients with chronic renal disease, including diabetic renal insufficiency, should have their serum potassium level checked periodically (Harrison's, p. 287; Jacobs, p. 172; Sox, p. 434).

6. Hyperaldosteronism: Since this condition leads to hypokalemia, monitoring of the serum potassium level is important (Harrison's, p. 286-8, 1725-7; Jacobs, p. 172).

7. Diabetes mellitus: Measurement of serum potassium is important for diabetics with ketoacidosis (Jacobs, p. 172). Also, since insulin deficiency may lead to hyperkalemia, monitoring of serum potassium may be appropriate in other diabetics as well (Harrison's, p. 288).

8. Angiotensin-converting enzyme inhibitor therapy: ACE inhibitors may induce hyperkalemia; therefore, serum potassium levels should be checked in patients taking these drugs (DE, p. 488; Harrison's, p. 288).

(cont'd)

Potassium (Serum Level) (cont'd) CODE: 04

DIAGNOSTIC/COMPLAINT/DRUG MONITORING INDICATIONS: (cont'd) **Flag: T1**

Review Question: Indicate if any of the following conditions, symptoms, or drugs are in medical record.

9. Corticosteroid therapy (long-term, high-dose): Treatment with mineralocorticoids and some glucocorticoids may induce hypokalemia; therefore, patients taking such drugs should have their serum potassium measured (Harrison's, p. 375).

10. Dizziness, confusion: This item emerged from the criteria development process but has not been verified. The investigators propose deletion.

11. Muscle cramps, myalgias: Hyperkalemia may be associated with periodic muscular paralysis or weakness; thus, measurement of serum potassium may aid in diagnosing this condition (Harrison's, p. 176, 288).

12. Polyuria: K+ depletion with hypokalemia inhibits renal concentrating ability, leading to polyuria. Serum K+ is useful in differential of polyuria (Harrison's, p. 275).

13. ECG changes suggestive of hyperkalemia (serum potassium >5.7 meq/dL) or hypokalemia (serum potassium <3 meq/L): Cardiac arrhythmias are among the major toxic effects of hyperkalemia; hypokalemia also leads to characteristic ECG abnormalities (Harrison's, p. 288). If such ECG changes are present, the serum potassium level should be measured promptly.

14. Chronic fatigue: Weakness and fatigue may be associated with abnormal levels of potassium in serum (Harrison's, p. 176).

SCREENING: None

TRIGGER VALUE REQUIRING IMMEDIATE TRANSFER TO HOSPITAL/ER: **Flag: T2**

Review Question: Indicate if an immediate response shown below was required and done within 24 hours of test results.

1. If serum potassium >6.0 meq/L with ECG changes of hyperkalemia.

2. If serum potassium <2.5 meq/L with ECG evidence of digoxin toxicity.

Potassium (Serum Level) (cont'd) CODE: 04

TEST VALUE RANGES REQUIRING TREATMENT OR WORKUP: Flag: T3

Review Question: Look ahead in the record and indicate if there is evidence that the sequence of actions below was initiated in the time specified.

Result Range:

1. Serum potassium <3.0 meq/L on diuretics (except potassium-sparing) or on long-term, high-dose corticosteroids:

   Decrease or discontinue hypokalemia*-inducing drugs OR add oral potassium replacement therapy, AND/OR change to potassium-sparing diuretic. Retest within 1 month.

   Time Frame: 1 week

   Rationale: Hypokalemia can occur in patients who are on diuretic therapy. Serum potassium falls after diuretic therapy is started, reaching its lowest point in six to twelve weeks and then remains stable (Sox, p. 372). Hypokalemia caused by diuretic use can be reversed if the drugs are decreased or discontinued.

2. Serum potassium <3.0 meq/L and not on diuretics or hypokalemia-inducing drugs:

   Check history for chronic diarrhea, enema use, laxative abuse, chronic alcohol use.

   Time Frame: 1 week

   Rationale: Hypokalemia can occur in patients with large gastrointestinal fluid losses (Sox, p. 369).

3. Serum potassium 5.7-6.0 meq/L and on ACE inhibitors, NSAIDs, potassium-sparing diuretics, or potassium supplement therapy:

   Decrease or discontinue drugs if appropriate. Retest within 2 weeks.

   Time Frame: 1 week

   Rationale: Hyperkalemia can result from ACE inhibitors, NSAIDs, potassium-sparing diuretic drugs and from potassium supplements, and can have a dramatic effect on cardiac functioning (Sox, p. 373). Hyperkalemic effects can be reversed if drugs are decreased or discontinued.

4. Serum potassium 5.7-6.0 meq/L and not on ACE inhibitors, NSAIDs, potassium-sparing diuretics, or potassium supplement therapy:

   Repeat serum electrolyte and BUN/creatinine and review results within 1 week.

   Time Frame: 1 week

   Rationale: Serum potassium imbalance frequently occurs in patients with changing renal functioning, such as acute renal failure (Sox, p. 373). BUN and/or creatinine levels indicate renal functioning.

* Hypokalemia is defined as serum potassium <3 meq/L.

GLUCOSE-FASTING AND RANDOM BLOOD LEVELS

CODE: 05

DIAGNOSTIC/COMPLAINT/DRUG MONITORING INDICATIONS:

Flag: T1

Review Question: Indicate if any of the following conditions, symptoms, or drugs are in medical record.

1. Alcoholism: Alcoholism predisposes the diabetic to ketoacidosis (Harrison's, p. 291).
2. Polyuria: Hyperglycemia causes the renal threshold for glucose reabsorption to be exceeded, with resultant glucosuria. The glucosuria, in turn, causes polyuria (Merck, p. 792) or nocturia (Branch, p. 767).
3. Polydipsia: Dry mouth and polydipsia are experienced by about two-thirds of patients with non-insulin-dependent diabetes mellitus before diagnosis is established (Branch, p. 767). Polydipsia may be secondary to polyuria (Merck, p. 792).
4. Polyphagia: Because insulin becomes increasingly ineffective, the body is unable to utilize calories efficiently. This may lead to weight loss and polyphagia (Merck, p. 792).
5. Weight loss: Loss of weight may accompany the onset of diabetes. Insulin deficiency and excess glucagon lead to impaired anabolic metabolism so that the net energy state is catabolic. Weight loss may occur despite increased food intake (Harrison's, p. 260; Merck, p. 792).
6. Visual changes: Fluctuations in plasma glucose concentration may cause alterations in the shape of the ocular lens. Blurring of vision and fluctuations in visual acuity may result (Branch, p. 767; Merck, p. 792).
7. Glycosuria: After meals glycosuria may be present in the person with diabetes (Branch, p. 767; Merck, p. 792).
8. Diabetes mellitus (symptoms of hypoglycemia, lightheadedness, sweating): Most patients with non-insulin-dependent diabetes experience weakness and fatigue (Branch, p. 767). Diabetics using insulin may also experience hypoglycemia, with tremor, nervousness, sweating, and hunger (Harrison's, p. 1747).
9. Confirmation of self-monitoring values obtained at home: Blood glucose measurements performed by the patient may be confirmed by laboratory tests done at the physician's discretion.

SCREENING: Annually if patient is obese, has a family history of diabetes, or had gestational diabetes.

TRIGGER VALUE REQUIRING IMMEDIATE TRANSFER TO HOSPITAL/ER:

Flag: T2

Review Question: **Indicate if an immediate response shown below was required and done within 24 hours of test results.**

1. Glucose >400 mg/dL with ketonuria and if blood gases done, pH <7.3 (diabetic ketoacidosis)

   OR

   Glucose >700 mg/dL and change in mental status (hyperosmolar coma).

TEST VALUE RANGES REQUIRING TREATMENT OR WORKUP: Flag: T3

Review Question: Look ahead in the record and indicate if there is evidence that the sequence of actions below was initiated in the time specified.

Result Range:

1. Glucose is <50 mg/dL and patient not known to be diabetic:

   Repeat glucose after 12-hour fast OR get plasma insulin.

   Time Frame: 1 week

   Rationale: Hypoglycemia in a non-diabetic may be caused by an organic problem which requires further workup and diagnosis (Branch, p. 4). A diagnosis should not be made on the result of a single test (Sox, p. 128).

2. Blood glucose >140 mg/dL (if known to be fasting) and patient not known to be diabetic:

   Recheck again before diagnosing diabetes mellitus, either with fasting glucose, glucose tolerance test, OR 2-hour post-prandial test. Perform a dipstick urinalysis for glycosuria/ketonuria. Review results within 2 weeks.

   Time Frame: 1 month

   Rationale: National Diabetes Data Group and World Health Organization standards require a repeat finding of abnormal plasma glucose levels before making a diagnosis. Abnormal is defined as ≥140 mg/dL fasting or 200 mg/dL non-fasting. Urine testing is an indirect measure of blood glucose (Sox, p. 128), while ketone bodies in the urine indicate that insulin effects are absent or almost absent (Merck, p. 793).

3. Glucose is >250 mg/dL and no known diabetes:

   Perform dipstick urinalysis for glycosuria/ketonuria and if ketones positive, proceed as in Range 4. If ketones negative, recheck another blood glucose at a known time interval after intake OR perform a fasting blood glucose.

   Time Frame: 3 months

   Rationale: National Diabetes Data Group and World Health Organization standards require a repeat finding of abnormal plasma glucose levels before making a diagnosis. Abnormal is defined as ≥140 mg/dL fasting or 200 mg/dL non-fasting. Urine testing is an indirect measure of blood glucose (Sox, p. 128), while ketone bodies in the urine indicate that insulin effects are absent or almost absent (Merck, p. 793).

(cont'd)

Glucose-fasting and Random Blood Levels (cont'd) **CODE: 05**

TEST VALUE RANGES REQUIRING TREATMENT OR WORKUP: (cont'd) **Flag: T3**

Review Question: Look ahead in the record and indicate if there is evidence that the sequence of actions below was initiated in the time specified.

Result Range:

4. Glucose is >250 mg/dL and no known diabetes, and urine ketones positive:

   Perform blood glucose, fasting, OR at timed relationship to intake and serum electrolytes. Review results within 1 week.

   Time Frame: 2 days

   Rationale: National Diabetes Data Group and World Health Organization standards require a repeat finding of abnormal plasma glucose levels before making a diagnosis. Abnormal is defined as ≥140 mg/dL fasting or 200 mg/dL non-fasting. Urine testing is an indirect measure of blood glucose (Sox, p. 128), while ketone bodies in the urine indicate that insulin effects are absent or almost absent (Merck, p. 793). Hyperglycemia may produce mild ketoacidosis in the elderly (Merck, p. 308, 793); therefore, prompt assessment is prudent.

5. Glucose is >250 mg/dL and no known diabetes but has symptoms of weight loss with no appetite loss, excessive fluid intake, excessive urine volume:

   Diagnose diabetes and start therapy with dietary advice with or without oral hypoglycemic or insulin therapy. Review results within 1 week.

   Time Frame: 1 week

   Rationale: For patient with symptoms, an elevated glucose level is sufficient for a diagnosis of diabetes (Sox, p. 125, 128). Diet therapy is the first step in a diabetic treatment program (Merck, p. 793).

6. Glucose is <50 mg/dL and known diabetic:

   Ask patient if symptoms of hypoglycemia and if symptoms, decrease the dose of the oral agent (or discontinue if low dose) OR decrease the insulin dose.

   Time Frame: 2 days

   Rationale: Control of blood glucose level prevents or delays many of the complications associated with diabetes (Merck, p. 802). The goal of therapy is to control hyperglycemia with blood glucose concentrations before meals of less than 180, 150, or 120, depending on desired level of control, without producing frequent or severe hypoglycemic reactions (or hypoglycemia) (Branch, p. 770; Merck, p. 805).

(cont'd)

Glucose-fasting and Random Blood Levels (cont'd) CODE: 05

TEST VALUE RANGES REQUIRING TREATMENT OR WORKUP: (cont'd) Flag: T3

Review Question: Look ahead in the record and indicate if there is evidence that the sequence of actions below was initiated in the time specified.

Result Range:

7. Blood glucose is >250 mg/dL (if not known to be fasting) or >170 mg/dL (if known to be fasting) in a patient known to be a diabetic:

   Start or increase the dose of oral antidiabetic agent OR start insulin therapy OR change the insulin regime, unless noted as to why action not performed (e.g., infection, stress, poor dietary compliance).

   Time Frame: 1 week

   Rationale: Control of blood glucose level prevents or delays many of the complications associated with diabetes (Merck, p. 802). The goal of therapy is to control hyperglycemia with blood glucose concentrations before meals of less than 180, 150, or 120, depending on desired level of control, without producing frequent or severe hypoglycemic reactions (or hypoglycemia) (Branch, p. 770; Merck, p. 805).

BLOOD GASES

CODE: 06

DIAGNOSTIC/COMPLAINT/DRUG MONITORING INDICATIONS: **Flag: T1**

Review Question: Indicate if any of the following conditions, symptoms, or drugs are in medical record.

1. Acute asthma, pneumonia, or pulmonary edema: Blood gas analysis should be done for any patient who is severely ill with an acute attack of asthma or pneumonia or one who has acute pulmonary edema (Sox, p. 105, 114).
2. Change in status of patient with COPD or asthma: A significant worsening of pulmonary status is an indicator for blood gas analysis (Sox, p. 104-6, 114).
3. Exclude pulmonary embolus: Most, but not all, patients with pulmonary embolus have a low pO_2. Therefore, this test is a helpful adjunct but not a definitive diagnostic guide for ruling out pulmonary embolus (Sox, p. 107).
4. Acid/base abnormalities: A suspicion of diabetic ketoacidosis is an indicator for performance of a blood gas analysis (Sox, p. 105, 114).
5. Sleep apnea: If a patient presents with symptoms of sleep apnea, a blood gas analysis will help distinguish between central and obstructive sleep apnea (Harrison's, p. 1119-21; Sox, p. 105).
6. Oxygen therapy: Blood gas analysis can be useful in monitoring the status of patients receiving oxygen therapy (Sox, p. 108, 112).

SCREENING: None

TRIGGER VALUE REQUIRING IMMEDIATE TRANSFER TO HOSPITAL/ER: **Flag: T2**

Review Question: Indicate if an immediate response shown below was required and done within 24 hours of test results.

1. Previously normal patient: If the pO_2 is <60 mmHg or pH <7.3.
2. Patient with COPD, asthma, or pneumonia: If new onset of pO_2 <50 mmHg or pH <7.

Blood Gases (cont'd) CODE: 06

TEST VALUE RANGES REQUIRING TREATMENT OR WORKUP: Flag: T3

Review Question: Look ahead in the record and indicate if there is evidence that the sequence of actions below was initiated in the time specified.

Result Range:

1. New onset of pO_2 of 60-70 mmHg with cough and dyspnea:

   Check chest x-ray and review result in 1 day.

   Time Frame: 1 day

   Rationale: A drop in $pO_2 \geq 10$ to 15 mm Hg indicates acute respiratory failure (Harrison 's p. 1080). Since there is a gradual decrease in pO_2 in advancing age, this range may not be acute respiratory failure, but needs diagnosis (Merck, p. 428). A chest x-ray is the cornerstone of a diagnostic workup of the patient with suspected pulmonary disease (Harrison's p. 1032). The presence of pulmonary infiltrate on the chest x-ray is diagnostic of pneumonia (Merck, p. 439).

CREATININE (SERUM) CODE: 07

DIAGNOSTIC/COMPLAINT/DRUG MONITORING INDICATIONS: Flag: T1

Review Question: Indicate if any of the following conditions, symptoms, or drugs are in medical record.

1. Renal disease (known or suspected): Increased serum creatinine levels indicate renal dysfunction (or its severity) (Harrison's, p. 1006, 1010-11, 1014).

2. Hypertension: Since renal disease is a common sequela of hypertension, periodic testing of the serum creatinine level is important to monitor renal function (Culik, p. 11; Harrison's, p. 1006, 1010-11, 1014).

3. Diabetes: Since diabetes is a risk factor for renal disease, renal function should be monitored. A positive test for proteinuria would indicate the need to measure the serum creatinine level, which reflects the degree of renal dysfunction (Allerheiligen, p. 38; Branch, p. 624-5).

4. Congestive heart failure: The reduced blood flow that results from congestive heart failure may lead to azotemia: therefore, discretionary use of the serum creatinine test is helpful in certain of these patients (Harrison's, p. 271-3, 894); Jacobs, p. 91).

5. Proteinuria (new-onset) or abnormal urine cell count: Proteinuria is an indicator of renal dysfunction, and this finding warrants doing a serum creatinine test (Allerheiligen, p. 38). The presence of blood cell casts in the urine indicates urinary-tract pathology (Harrison's, p. 274-5), which may warrant performance of a serum creatinine test.

6. Medications (ACE inhibitors and NSAIDs): If a patient with renal disease is using a drug of the ACE inhibitor class, serum creatinine should be tested periodically to monitor renal function, which may be affected by these drugs (DE, p. 489). Long-term use of nonsteroidal anti-inflammatory drugs may impair renal function, especially in the elderly (DE, p. 102); therefore, monitoring of the serum creatinine level is warranted for elderly persons taking these drugs.

SCREENING: Not indicated.

TRIGGER VALUE REQUIRING IMMEDIATE TRANSFER TO HOSPITAL/ER: Flag: T2

Review Question: Indicate if an immediate response shown below was required and done within 24 hours of test results.

Newly abnormal creatinine > 10 mg/dL.

Creatinine (Serum) (cont'd) CODE: 07

TEST VALUE RANGES REQUIRING TREATMENT OR WORKUP: Flag: T3

Review Question: Look ahead in the record and indicate if there is evidence that the sequence of actions below was initiated in the time specified.

Result Range:

1. New finding of creatinine 1.5-2.5 mg/dL and not known to have renal disease:

   If on drugs which affect renal function,* decrease or discontinue medications. Check urine sediment exam and culture, and retest serum creatinine within 3 months. If remains abnormal, request consultation OR referral.

   Time Frame: 1 month

   Rationale: Several drugs affect renal functioning (NSAIDs [DE p. 1336], ACE inhibitors [DE p. 489], sulfonomide [DE p. 1702], antipseudomonal penicillin [DE p. 1169], cephalosporin [DE p. 1214[, gold [DE p. 1720]). These should be decreased or discontinued. After excluding causes of increased creatinine levels that can be remedied, serum creatinine should be repeated, since a single value of serum creatinine is not a good determinant of glomerular filtration rate (Branch, p. 625).

2. New finding of creatinine >2.5 mg/dL and not known to have renal disease:

   If on drugs which affect renal function,* decrease or discontinue medications. Check urinary sediment examination and culture and check 24-hour urine collection for creatinine clearance. Retest creatinine within 2 months.

   Time Frame: 2 weeks

   Rationale: Several drugs affect renal functioning (NSAIDs, [DE p. 1336], ACE inhibitors [DE p. 489], sulfonomide [DE p. 1702], antipseudomonal penicillin [DE p. 1169], cephalosporin [DE p. 1214], gold [DE p. 1720]). These should be decreased or discontinued. Other possible causes of increased creatinine levels that can be remedied should be identified. Since a single value of serum creatinine is not a good determinant of glomerular filtration rate, 24-hour creatinine clearance should be tested. Serum creatinine should be repeated to monitor possible decline in renal functioning (Branch, p. 625).

3. Creatinine increases >50% above baseline and known renal disease:

   If on drugs which affect renal function, decrease or discontinue medications. Check urinary sediment examination and culture and creatinine clearance. If creatinine clearance has fallen, request consultation OR referral within 2 months.

   Time Frame: 2 weeks

   Rationale: Several drugs affect renal functioning (NSAIDs [DE p. 1336], ACE inhibitors [DE p. 489], sulfonomide [DE p. 1702], antipseudomonal penicillin [DE p. 1169], cephalosporin [DE p. 1214], gold [DE p. 1720]). These should be decreased or discontinued. Other possible causes of increased creatinine levels that can be remedied should be identified. Since a single value of serum creatinine is not a good determinant of glomerular filtration rate, 24-hour creatinine clearance should be tested. Serum creatinine should be repeated to monitor possible decline in renal functioning (Branch, p. 625).

* NSAIDs, ACE inhibitors, sulfonamides in therapeutic doses (not prophylactic), antipseudomonas penicillins, cephalosporins, penicillamine, gold

ESR (ERYTHROCYTE SEDIMENTATION RATE)

CODE: 08

(DEMPAQ criteria specify a Westergren sedimentation rate of >30 mm/h as abnormal for all patients >65 years of age.)*

DIAGNOSTIC/COMPLAINT/DRUG MONITORING INDICATIONS: **Flag: T1**

Review Question: Indicate if any of the following conditions, symptoms, or drugs are in medical record.

1. Temporal arteritis (TA): A diagnosis of temporal arteritis or suggestive symptoms should prompt the ESR test. Patients with TA usually have an elevated ESR (Sox, p. 214-7; Harrison's, p. 1462).
2. Polymyalgia rheumatica (PMR): An increased ESR is characteristic of PMR. This diagnosis or its symptoms (e.g., shoulder weakness, pelvic girdle pain) should prompt the ESR test (Sox, p. 214-7).
3. Arthritis (inflammatory): Since the ESR is generally increased in patients with rheumatoid arthritis, the ESR is useful to distinguish inflammatory from noninflammatory forms of arthritis (Harrison's, p. 1439; Jacobs, p. 357; Sox, p. 218-9).
4. Cancer: While the ESR is often normal in patients with cancer, those with metastatic cancer usually have an elevated ESR (Sox, p. 212-4).
5. Infections: The ESR may be elevated in infections; however, with few exceptions (e.g., vertebral osteomyelitis), the ESR is not a useful test for diagnosis of infections (Jacobs, p. 347; Sox, p. 219-20).
6. Hodgkin's disease: The ESR test is useful for monitoring Hodgkin's disease (Harrison's, p. 1610; Sox, p. 223-4).
7. Fever of unknown origin (FUO): Common causes of FUO are infection, malignancy, rheumatoid arthritis, and PMR, all of which may be associated with an elevated ESR (Harrison's, p. 128-31; Sox, p. 212-24).

SCREENING: None

TRIGGER VALUE REQUIRING IMMEDIATE TRANSFER TO HOSPITAL/ER: None **Flag: T2**

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* The literature cites a rate of >20 as abnormal for males and a rate of >30 as abnormal for females (Harrison's, p. A-5; Merck, p. 1170; Sox, p. 206).

ESR (Erythrocyte Sedimentation Rate) (cont'd) CODE: 08

TEST VALUE RANGES REQUIRING TREATMENT OR WORKUP: Flag: T3

Review Question: Look ahead in the record and indicate if there is evidence that the sequence of actions below was initiated in the time specified.

Result Range:

1. ESR >30 and <80, new finding with no obvious cause:

   Do routine history and physical examination only. Repeat test within 6 months.

   Time Frame: 1 month

2. ESR >80, cause unknown but with symptoms of polymyalgia rheumatic and/or temporal arteritis (such as headache):

   Therapeutic/diagnostic trial of steroid therapy, within 2 days OR request consultation OR referral.

   Time Frame: 2 days

3. ESR 80-100 and cause unknown:

   Review complete history and physical examination and make decision whether or not to proceed with workup.

   Time Frame: 1 month

4. ESR >100:

   Examination and history needed to rule out occult infection, malignancy, or inflammation. If none of these causes found, then do serum electrophoresis (SPEP). If no cause found, see again in 3 months OR request consultation OR referral.

   Time Frame: 1 month

URINE DIPSTICK

CODE: 09

DIAGNOSTIC/COMPLAINT/DRUG MONITORING INDICATIONS:

Flag: T1

Review Question: Indicate if any of the following conditions, symptoms, or drugs are in medical record.

1. Suspicion of urinary-tract infection (dysuria, frequency): The presence of white blood cells in the urine (leukocyte esterase) is a marker for urinary-tract infection (Branch, p. 545).
2. Known diabetes mellitus: Diabetic kidney disease is associated with proteinuria (Branch, p. 504-7).
3. Hypertension (check for proteinuria): Hypertensive kidney disease may cause proteinuria (Branch, p. 505).
4. Trauma: The clinician should exercise judgment in using the dipstick test for patients who have had traumatic injury that may affect the kidney or urinary tract.
5. Kidney stones: Patients with nephrolithiasis may have proteinuria (Branch, p. 505) and should be monitored by periodic dipstick tests.
6. Suspicion of kidney or urinary-tract disease: A number of diseases affecting the urinary tract can produce abnormalities detectable by the urine dipstick test, which may be helpful in diagnosis (Branch, p. 491-515).
7. Presence of disease that may affect renal function: Systemic or metabolic diseases (e.g., diabetes, hypertension) may impair kidney function. The dipstick test is helpful as a way of monitoring these conditions and their renal impact (Branch, p. 491-515).
8. Polyuria: Since polyuria is characteristic of diabetes, the urine dipstick test for glucose should be done for the patient with polyuria (Branch, p. 767; Merck, p. 792).
9. Oliguria: Oliguria can be the presenting symptom in patients with acute tubular necrosis, and the dipstick test may reveal proteinuria, hematuria, and pyuria (Branch, p. 510).
10. Use of drugs that may affect renal function, e.g., NSAIDs, ACE inhibitors, sulfonamides (therapeutic, not prophylactic) doses, antipseudomonas penicillins, cephalosporins, penicillamine, gold: Dipstick urinalysis should be used to monitor renal function of patients using these drugs (Branch, p. 510-11).

SCREENING: Indicated at any visit.

TRIGGER VALUE REQUIRING IMMEDIATE TRANSFER TO HOSPITAL/ER:

Flag: T2

Review Question: Indicate if an immediate response shown below was required and done within 24 hours of test results.

1. 4+ ketones with or without glucose (unless on diet or fasting).

Urine Dipstick (cont'd) CODE: 09

TEST VALUE RANGES REQUIRING TREATMENT OR WORKUP: Flag: T3

Review Question: Look ahead in the record and indicate if there is evidence that the sequence of actions below was initiated in the time specified.

Result Range:

1. >3+ urine glucose:

Diabetic:
Check dietary and medical compliance and change therapy if required.

Time Frame: 1 week

Rationale: Urine glucose is an indirect measure of blood glucose (Sox, p. 122). The goal of treatment for a diabetic patient is to control blood glucose level with diet and/or drugs to prevent or delay complications of the disease (Merck, p. 802).

Non-diabetic:

Check blood glucose at timed relationship to food intake, check urine ketones. Review results in 1 month.

Time Frame: 1 week

Rationale: Urine glucose is an indirect measure of blood glucose (Sox, p. 122). Ketone bodies in the urine indicate that insulin effects are absent or almost absent (Merck, p. 793). A diagnosis of diabetes and a course of treatment depend of assays of blood glucose (Sox, p. 121).

2. >1+ protein and new finding, no known diabetes:

Infection:
Check urine culture or leukocyte esterase. If infected, treat appropriately.

Time Frame: 2 weeks

Rationale: A protein level of 1+ detected by dipstick is an indicator of an abnormal amount of protein usually due to: 1) systemic disease, 2) idiopathic disease, or 3) nephrotic syndrome. The presence of leukocyte esterase would indicate an infection (Branch, p. 505, 545).

No Infection:
Check early morning urine sediment and dipstick and serum creatinine. If early morning proteinuria found, then check 24-hour urine collection for protein. Review results in 1 month.

Time Frame: 2 weeks

Rationale: A protein level of 1+ detected by dipstick is an indicator of an abnormal amount of protein usually due to: 1) systemic disease, 2) idiopathic disease, or 3) nephrotic syndrome. If no infection present, determine if proteinuria is constant or transient orthostatic proteinuria. Patients with orthostatic proteinuria will have <1 gm of urinary protein per 24 hours (Branch, p. 505).

(cont'd)

Urine Dipstick (cont'd) **CODE: 09**

TEST VALUE RANGES REQUIRING TREATMENT OR WORKUP: (cont'd) **Flag: T3**

Review Question: Look ahead in the record and indicate if there is evidence that the sequence of actions below was initiated in the time specified.

Result Range:

3. ≥1+ protein and new finding, known diabetic or hypertensive, or other conditions or drugs which affect kidney function:

Infection:

Check urine culture and serum creatinine; if infected, then treat with antibiotics. See patient to review results within 1 month.

Time Frame: 2 weeks

Rationale: A protein level of 1+ detected by dipstick is an indicator of an abnormal amount of protein usually due to: 1) systemic disease, 2) idiopathic disease, or 3) nephrotic syndrome. A urine culture would determine the presence of infection from a systemic disease. Moderate amounts of proteinuria are seen in some conditions which impair renal functioning, such as benign diabetes and hypertensive nephrosclerosis. Further tests should be done to confirm the renal impairment. Moderate amounts of proteinuria can be due to a variety of drugs including probenecid, fenprofen, gold, penicillamine, captopril, trimethadione, the penicillins and aminoglycosides (Branch, p. 491, 505, 515).

No Infection:

Check urine sediment, serum creatinine. See patient to review findings in 2 weeks OR request consultation OR referral.

Time Frame: 2 weeks

Rationale: Moderate amounts of proteinuria are seen in some conditions that impair renal functioning, such as benign diabetes and hypertensive nephrosclerosis. Further tests should be done to confirm the renal impairment. Moderate amounts of proteinuria can be due to a variety of drugs including probenecid, fenprofen, gold, penicillamine, captopril, trimethadione, the penicillins and aminoglycosides (Branch, p. 491, 505, 515).

4. 4+ proteinuria and new finding, no known diabetes:

Repeat urinalysis. Check serum creatinine, quantitative protein, or creatinine/protein ratio. If >3 g protein/24 hours or equivalent on spot urine, do urine immunoassay, electrophoresis, and review results within 1 month OR request consultation OR referral.

Time Frame: 1 week

Rationale: Proteinuria in amounts of more than 3.5 gm per 24 hours indicates nephrotic syndrome. Patients with nephrotic syndrome will need extensive workup to determine cause (most commonly, membranous glomerulonephritis, or minimal-change disease or amyloidosis), treatment, and prognosis (Branch, p. 507; Merck, p. 602).

(cont'd)

Urine Dipstick (cont'd) CODE: 09

TEST VALUE RANGES REQUIRING TREATMENT OR WORKUP: (cont'd) Flag: T3

Review Question: Look ahead in the record and indicate if there is evidence that the sequence of actions below was initiated in the time specified.

Result Range:

5. + leukocyte esterase:

Check urine culture OR microscopic examination. If positive, start treatment.

Time Frame: 1 week

Rationale: The presence of leukocyte esterase in urine is an abnormal finding and indicates presence of infection (Branch, p. 545).

6. + ketones glucose:

No Urine Glucose:

Review history for fasting, dehydration, alcohol use. Hydrate and review patient by next day.

Time Frame: 1 week

Rationale: Ketone bodies in the urine indicate that insulin is not present or effective in converting glucose. In the absence of glucose, ketones are probably the result of fasting, dehydration, or alcohol use (Merck, p. 308, 793).

Urine Glucose:

Check blood glucose at known relationship to food intake and serum total CO_2 and ketones and review by next day.

Time Frame: 1 week

Rationale: Ketone bodies in the urine indicate that insulin is not present or effective in converting glucose. Hyperglycemia frequently produces mild ketoacidosis in the elderly (Merck, p. 308, 793; Sox, p. 128).

(cont'd)

Urine Dipstick (cont'd)

CODE: 09

TEST VALUE RANGES REQUIRING TREATMENT OR WORKUP: (cont'd)

Flag: T3

Review Question: Look ahead in the record and indicate if there is evidence that the sequence of actions below was initiated in the time specified.

Result Range:

7. + heme:

Infection:

Check for urinary infection (urine culture or leukocyte esterase). If infected, treat with antibiotic.

Time Frame: 2 weeks

Rationale: First confirm the hematuria, then culture to determine if infection (a likely cause) is present. If infected, treat with antibiotic (Branch, p. 493).

No urinary infection with ≥1+ proteinuria:

Get microscopic examination of urine sediment. If hematuria confirmed and red cell casts seen, refer to nephrology. If no red cell casts seen, do IVP AND/OR cystoscopy AND/OR ultrasound.

Time Frame: 2 weeks

Rationale: An evaluation must be done to exclude serious causes of hematuria without infection. The evaluation should be one that spares expense and invasive and repeated tests if possible. When casts are present, the source of hematuria is within the renal parenchyma and, therefore, the diagnosis is more difficult; referral to a nephrologist is appropriate. In the absence of casts, IVP, cystoscopy or ultrasound may be performed to explore the kidney and lower urinary tract for other causes of hematuria. Proteinuria is present in about half of the patients with glomerular abnormalities (Branch, p. 493, 496).

No urine infection and no proteinuria:

Perform prostate examination in male, pelvic examination in female. Do IVP AND/OR cystoscopy AND/OR ultrasound.

Time Frame: 2 weeks

Rationale: An evaluation must be done to exclude serious causes of hematuria without infection. The evaluation should be one that spares expense and invasive and repeated tests, if possible. IVP, cystoscopy, or ultrasound may be performed to explore the kidney and lower urinary tract for causes of hematuria. In male patients, the prostate should be carefully examined, since bleeding occurs in carcinoma, benign hypertrophy of the prostate, and chronic prostatitis (Branch, p. 493, 495).

ECG

CODE: 10

DIAGNOSTIC/COMPLAINT/DRUG MONITORING INDICATIONS: **Flag: T1**

Review Question: Indicate if any of the following conditions, symptoms, or drugs are in medical record.

1. Intrinsic renal disease: The patient with kidney impairment may have abnormal levels of electrolytes in serum (e.g., potassium or calcium) which can lead to disturbances in cardiac rhythm (Harrison's, p. 287, 858-9, 1153-5, 1910-1). The ECG should be used with the clinician's judgment in monitoring the patient with renal disease.

2. Coronary artery disease, valvular heart disease: The resting ECG is a standard tool for diagnosis of coronary or ischemic heart disease (Levine and Nong, p. 10; Merck, p. 328, 354). Characteristic ECG changes may accompany mitral valve disease (Branch, p. 75, 79, 83-6) or aortic valve disease (Branch, p. 90).

3. Arrhythmias: The ECG is a useful tool in identifying and diagnosing cardiac arrhythmias (Branch, p. 21-42; Merck, p. 328).

4. Metabolic derangements (serum potassium or calcium): Abnormalities in the concentration of potassium or calcium in serum cause characteristic ECG patterns (Harrison's, p. 858-9).

5. Hypertension: An ECG is recommended as part of the diagnostic workup for the patient suspected of having hypertension (Culik et al., p. 11).

6. Diabetes mellitus: Diabetes is a risk factor for coronary artery disease (Branch, p. 152). The ECG should be used at the physician's discretion in monitoring the diabetic elderly patient.

7. Peripheral vascular disease: Disease, particularly arteriosclerosis, in the peripheral arteries often occurs concomitantly with similar disease in the coronary arteries (Harrison's, p. 994-5). Thus, the patient with peripheral vascular disease is at risk for coronary disease and the ECG should be done at the physician's discretion.

8. Preoperative evaluation: The ECG test is a usual component of the battery of medical tests used to assess a patient's status before surgery.

9. Tricyclic antidepressants (amitriptyline, amoxapine, desipramine, doxepin, imipramine, maprotiline, nortriptyline, protriptyline, trimipramine): The tricyclic compounds can cause tachycardia. They should be used with caution in elderly patients with hypertension, hypotension, bundle-branch block, and arrhythmias and in those who have recently had myocardcial infarction (DE, p. 265). The ECG can be used to monitor patients using these drugs.

10. Congestive heart failure: The ECG should be considered as part of the diagnostic workup for a patient suspected of having heart failure because ECG findings may suggest the etiology of the failure (Nong and Reams, p. 11).

SCREENING: Not a routine screen, except with diabetes mellitus, hypertension, coronary artery disease, and CHF.

ECG (cont'd) CODE: 10

TRIGGER VALUE REQUIRING IMMEDIATE TRANSFER TO HOSPITAL/ER: **Flag: T2**

Review Question: Indicate if an immediate response shown below was required and done within 24 hours of test results.

1. New findings on ECG of acute ischemic changes (ST elevation/depression), second- or third-degree heart block, severe metabolic derangements (change in T waves or intervals), multifocal ventricular premature beats, or ventricular tachycardia.

TEST VALUE RANGES REQUIRING TREATMENT OR WORKUP: **Flag: T3**

Review Question: Look ahead in the record and indicate if there is evidence that the sequence of actions below was initiated in the time specified.

Result Range:

1. If new onset rhythm disturbances, other than sinus tachycardia or atrial fibrillation or stable bradycardia or stable trigeminy/quadrageminy:

   If on drugs that affect rhythm or serum potassium, then decrease or remove. Do Holter monitor or note in record as to why one is not needed. If Holter confirms abnormality, start treatment OR request consultation OR referral to cardiology within 1 week.

   Time Frame: 1 week

   Rationale: Numerous drugs affect cardiac rhythm and serum potassium balance, such as beta blockers, calcium channel blockers, ACE inhibitors, other antihypertensive agents, antiarrhythmic drugs, and diuretics (DE, p. 470, 479, 481, 509, 512, 518, 520, 692, 696, 699). These should be decreased or discontinued. An arrhythmia should be evaluated with ambulatory monitoring to get an accurate accounting of symptoms with ECG disturbances (Merck, p. 328).

(cont'd)

TEST VALUE RANGES REQUIRING TREATMENT OR WORKUP: (cont'd) Flag: T3

Review Question: Look ahead in the record and indicate if there is evidence that the sequence of actions below was initiated in the time specified.

Result Range:

2. If new atrial fibrillation:

If on drugs that affect rhythm or serum potassium, decrease or remove. Check thyroid status, heart and lung examination, exclude fever. If fibrillation persists for more than 2 days, start anticoagulants and document decision whether or not to attempt to convert to normal sinus rhythm OR request consultation OR referral.

Time Frame: 1 day

Rationale: Numerous drugs affect cardiac rhythm and serum potassium balance, such as beta blockers, calcium channel blockers, ACE inhibitors, other antihypertensive agents, antiarrhythmic drugs, and diuretics (DE, p. 470, 479, 481, 509, 512, 518, 520, 692, 696, 699). These should be decreased or discontinued. Before treating the arrhythmia with drugs, the possible cause of the arrhythmia should be explored, especially thyroid dysfunction, CHF, electrolyte disturbance, pulmonary disease or, medication (Branch p. 25 and 37). If fibrillation lasts more than a day or two, anticoagulant therapy should be started two weeks before cardioversion to prevent or decrease arterial embolus. Because of the poor prognosis with atrial fibrillation, early cardioversion is warranted in most elderly patients (Branch, p. 25, 38; Merck, p. 374).

3. If new metabolic changes on ECG:

Check serum potassium or serum calcium. If on medicines which affect serum potassium and serum calcium, decrease or discontinue. Treat and retest in 1 week.

Time Frame: 2 days

Rationale: A proper balance of serum potassium and calcium is necessary for normal cardiac muscle functioning; therefore, serum potassium and calcium levels should be evaluated (Branch, p. 21). Numerous drugs affect cardiac rhythm and serum potassium balance, such as beta blockers, calcium channel blockers, ACE inhibitors, other antihypertensive agents, antiarrhythmic drugs, and diuretics (DE, p. 470, 479, 481, 509, 512, 518, 520, 692, 696, 699). These should be decreased or discontinued.

X-RAY: JOINT (EXCLUDING CERVICAL, THORACIC, AND LUMBAR SPINE) CODE: 11

DIAGNOSTIC/COMPLAINT/DRUG MONITORING INDICATIONS: Flag: T1

Review Question: Indicate if any of the following conditions, symptoms, or drugs are in medical record.

1. Rule out inflammatory/infectious process (septic joint): Destruction of cartilage, indicated by narrowing of the joint space, cannot be seen on radiographs until days 8-10 after onset. However, earlier x-rays are useful for comparison of later findings with baseline findings. Other means should be used to establish a diagnosis earlier (Branch, p. 837).

2. Status post trauma to limb with decreased passive and active range of motion (rule out fracture or dislocation): X-rays, history, and physical examination are all important in assessment of the patient who has had trauma to a joint (Harrison's, p. 1472-5).

3. Document joint effusion before joint aspiration: Diagnosis of joint effusion is established by joint aspiration. However, x-rays can suggest the presence of joint effusion (Branch, p. 837).

4. Patients with severe arthritis if surgical intervention is contemplated: X-rays are useful in assessing the status of the joint (Olson, p. 8-9, 22).

5. Monitoring status of arthritic joint: Radiographs are valuable for assessing and diagnosing patients with chronic monoarticular arthritis (Branch, p. 837). Periodic x-ray of the affected joint can monitor the rate of deterioration of the joint (Olson, p. 22).

6. Joint pain: X-rays can be helpful in diagnosing the various causes of joint pain, such as gouty, osteo-, or rheumatoid arthritis (Olson, p. 9), or fractures (Branch, p. 935; Harrison's, p. 1472-5).

7. Trauma to joint: X-rays can be useful supplements to history and physical examination in evaluating the patient with joint trauma (Harrison's, p. 1473-4).

SCREENING: None

TRIGGER VALUE REQUIRING IMMEDIATE TRANSFER TO HOSPITAL/ER: Flag: T2

Review Question: Indicate if an immediate response shown below was required and done within 24 hours of test results.

1. Septic-appearing joint or osteomyelitis or fracture.

X-ray: Joint (Excluding Cervical, Thoracic, and Lumbar Spine) (cont'd) CODE: 11

TEST VALUE RANGES REQUIRING TREATMENT OR WORKUP: Flag: T3

Review Question: Look ahead in the record and indicate if there is evidence that the sequence of actions below was initiated in the time specified.

Result Range:

1. Joint deformity with pain in joint:

   Adjust analgesia. If pain persists above patient's tolerance level despite 3 months of attempts to adjust therapy, request consultation OR referral.

   Time Frame: 2 weeks

2. Normal joint x-rays after trauma:

   Splint OR referral to physical therapy OR use nonsteroidal anti-inflammatory agents. If symptoms unabated after attempts at therapy for 1 month, then request consultation OR referral.

   Time Frame: 2 weeks

3. Inflamed joint with evidence of effusion:

   Perform diagnostic arthrocentesis OR initiate therapy OR adjust therapy OR request consultation OR referral.

   Time Frame: 2 days

4. Active arthritis and x-ray shows deterioration:

   Adjust therapy and retest within 4 months OR request consultation OR referral. If repeat x-rays at 4 months show continued deterioration despite therapy, request consultation OR referral.

   Time Frame: 2 weeks

X-RAY: CHEST

CODE: 12

DIAGNOSTIC/COMPLAINT/DRUG MONITORING INDICATIONS:

Flag: T1

Review Question: Indicate if any of the following conditions, symptoms, or drugs are in medical record.

1. Known or suspected heart disease: Cardiomegaly can be revealed by x-ray (Merck, p. 330). The radiograph may also provide useful indications about underlying abnormalities and status of cardiac failure (Branch, p. 129; Harrison's, p. 894). The radiograph may offer information about conditions such as mitral and aortic stenosis (Harrison's, p. 941, 947).

2. Known or suspected chest disease: Radiography is the primary diagnostic tool for suspected pulmonary disease (Goroll, p. 209; Harrison's, p. 1032, 1040, 1044). Conditions such as hypersensitivity pneumonitis (Harrison's, p. 1054), pulmonary fibrosis (Harrison's, p. 1084), pulmonary embolism (Harrison's, p. 1092), pneumonia (Harrison's, p. 555, 1065; Merck, p. 439), and pulmonary disease due to environmental contaminants (Harrison's, p. 1056-7) can be evaluated by x-ray.

3. Known or suspected esophageal disease: X-rays as well as history and endoscopic techniques are used for evaluating the patient who has difficulty swallowing or has other signs or symptoms of esophageal disease (Harrison's, p. 1215).

4. Heartburn/acid reflux: This item emerged from the criterion development process but has not been verified.

5. Chest or shoulder pain: Pain in this region can have any of a number of causes. A skeletal condition (e.g., fracture) could be detected by x-ray, as could some pulmonary problems such as infarction or cancer (Goroll, p. 665; Harrison's, p. 1092, 1104).

6. Cough, fever, or lung signs: A patient with any signs or symptoms suggestive of lung disease should have a chest x-ray (Harrison's, p. 1032).

7. Cough and weight loss in a smoker (rule out cancer): Chest x-rays of persons at high risk of lung cancer (i.e., smokers) are warranted if any sign or symptom of cancer is present (Harrison's, p. 1104-5).

8. Preoperative chest x-ray: Knowledge of any existing pulmonary conditions listed in this section and detectable by x-ray should be sought before surgery.

9. Chest trauma: Traumatic injury may cause fractured ribs or shoulder bones that can be detected by x-ray (Goroll, p. 66-7, 665) or internal injuries (e.g., pneumothorax) that could also be revealed by x-ray (Harrison's, p. 1032).

10. Suspected rib fracture: Rib fractures may result from cough as well as from trauma or other injury. In either case, x-ray is helpful in assessing the patient (Goroll, p. 66-7; Harrison's, p. 218).

11. Known tuberculosis or positive PPD test: The chest x-ray is important for the diagnosis and evaluation of tuberculosis (Harrison's, p. 642).

SCREENING: Annually for patients who are chronic smokers.

X-ray: Chest (cont'd) CODE: 12

TRIGGER VALUE REQUIRING IMMEDIATE TRANSFER TO HOSPITAL/ER: **Flag: T2**

Review Question: Indicate if an immediate response shown below was required and done within 24 hours of test results.

1. Significant evidence of congestive heart failure OR pulmonary edema OR pneumothorax impairing respiratory or cardiac function (e.g., new cyanosis, accessory muscle use, or respiration rate >30)

   OR

   Severe pneumonia with incapacitating symptoms OR pneumonia in debilitated patient OR pneumonia in patient unable to care for self AND without caregiver.

TEST VALUE RANGES REQUIRING TREATMENT OR WORKUP: **Flag: T3**

Review Question: Look ahead in the record and indicate if there is evidence that the sequence of actions below was initiated in the time specified.

Result Range:

1. Pneumonia:

   Treat with antibiotics and review within 1 week. If symptoms persist, repeat x-ray and get PPD within 1 month.

   Time Frame: 1 day

   Rationale: If patient fails to respond to antibiotic treatment, other conditions should be suspected, such as Legionnaire's disease or primary tuberculosis. Patients should be tested for TB if symptoms of pulmonary infiltrate, hilar adenopathy, or persistent pleural effusion exist. If negative for tuberculosis, patient should be retested in 6 to 8 weeks (Branch, p. 308).

2. Congestive heart failure:

   Review salt intake. Start or adjust diuretic therapy. Re-examine within 1 week. If symptoms persist, augment treatment OR request consultation OR referral.

   Time Frame: 1 week

   Rationale: Treatment should start with relatively simple forms of intervention. First, heart workload should be reduced by controlling salt and water retention. Subsequent steps involve identifying and treating or removing the underlying cause of disease (Branch, p. 130).

(cont'd)

X-ray: Chest (cont'd) **CODE: 12**

TEST VALUE RANGES REQUIRING TREATMENT OR WORKUP: (cont'd) **Flag: T3**

Review Question: Look ahead in the record and indicate if there is evidence that the sequence of actions below was initiated in the time specified.

Result Range:

3. Lung mass:

   Chest CT scan and biopsy or referral to pulmonary/thoracic surgeon.

   Time Frame: 2 weeks

   Rationale: A large, irregular central lung mass is likely to be a pulmonary neoplasm. Further diagnosis should be accomplished with lung scan and biopsy (Branch, p. 348).

4. Lung infiltrate:

   Treat with antibiotics for >1 week, then repeat chest x-ray and get PPD after therapy if symptoms persist.

   Time Frame: 1 day

   Rationale: If patient fails to respond to antibiotic treatment, other conditions should be suspected, such as Legionnaire's disease or primary tuberculosis. Patients should be tested for TB if symptoms of pulmonary infiltrate, hilar adenopathy, or persistent pleural effusion exist. If negative for tuberculosis, patient should be retested in 6 to 8 weeks (Branch, p. 308).

5. Pneumothorax, small newly discovered:

   Treat symptomatically, repeat x-ray within 24 hours and if increased in size, immediate referral or hospitalization.

   Time Frame: 1 day

   Rationale: Very small primary, spontaneous pneumothoraces may be observed so long as the patient's symptoms are mild and stable (Harrison's, p. 1113).

MAMMOGRAM **CODE: 13**

DIAGNOSTIC/COMPLAINT/DRUG MONITORING INDICATIONS: **Flag: T1**

Review Question: Indicate if any of the following conditions, symptoms, or drugs are in medical record.

1. Family history of breast cancer: Women who have a family history of breast cancer, among either maternal or paternal relatives, should be carefully monitored by mammography because a positive family history increases the risk by two- or threefold (Goroll, p. 500; U.S. Preventive Services Task Force, p. 44).

2. Personal history of breast cancer: Women who have had malignant or benign breast neoplasms have an increased risk of breast cancer and should be monitored by mammography (Goroll, p. 500-1).

SCREENING: Annual mammograms are recommended for all women aged ≥50 years (AMA Council on Scientific Affairs, p. 2541; Branch, p. 1239; Goroll, p. 502; U.S. Preventive Services Task Force, p. 43-4).

TRIGGER VALUE REQUIRING IMMEDIATE TRANSFER TO HOSPITAL/ER: None **Flag: T2**

TEST VALUE RANGES REQUIRING TREATMENT OR WORKUP: **Flag: T3**

Review Question: Look ahead in the record and indicate if there is evidence that the sequence of actions below was initiated in the time specified.

Result Range:

1. Abnormal mammogram, diagnostic of malignancy:

   Refer back to radiology or surgery.

   Time Frame: 1 week

   Rationale: Mammogram has diagnostic value for detecting mass lesions in the breast, indicative of carcinoma. Mass lesions should be referred to a radiologist, who can assess the characteristics of the mass to determine if it is benign or malignant (Branch, p. 1239). Biopsy should follow (Harrison , P. 1615).

2. Abnormal mammogram, not diagnostic:

   Requires repeat test in time specified by the radiologist.

   Time Frame: 6 months

   Rationale: The risk of developing breast cancer after a benign disease has been diagnosed is increased relative to the total population of women (Harrison, p. 1614). Women with an abnormal mammogram should be followed.

Procedure Indications

Patient Id: Procedure: Visit Date:

This procedure is used to monitor the following conditions or to investigate the following symptoms. Indicate if any of these conditions, or symptoms are found in the medical record. 1=yes; 0=no

Look in entire MR.

0◄

0 Was this procedure done by another MD? 1=yes; 0=no
(if yes, this procedure is not reviewed)

Procedure Urgent Response

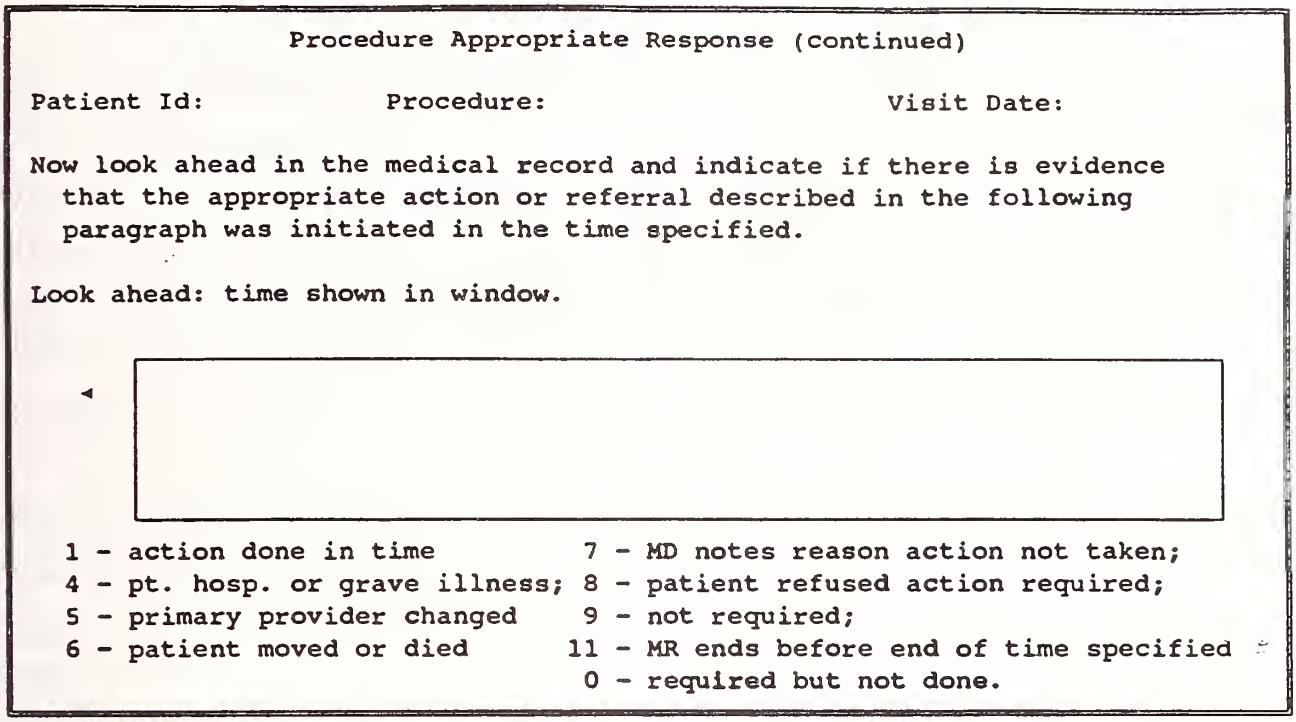
Patient Id: Procedure: Visit Date:

Indicate if an immediate response shown below was required and done within 24 hours of the finding.

Look ahead: to next visit note.

9 ◄

1 - hospitalization;
2 - specified referral;
3 - other referral;
6 - patient moved or died;
7 - MD notes reason not done;
8 - patient refused action required;
9 - not required;
11 - MR ends before end of time specified;
0 - required but not done.



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               Procedure Appropriate Response (continued)

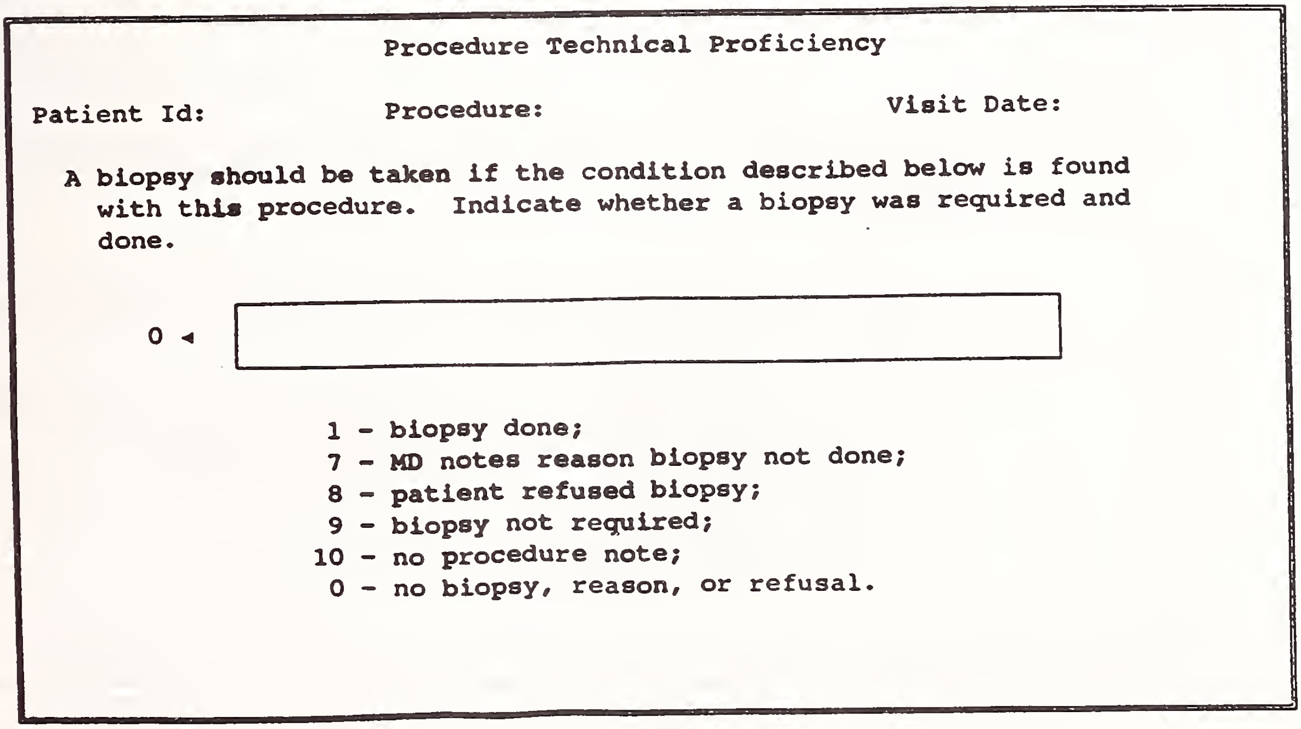
Patient Id:           Procedure:                     Visit Date:

Now look ahead in the medical record and indicate if there is evidence
  that the appropriate action or referral described in the following
  paragraph was initiated in the time specified.

Look ahead: time shown in window.

   ◄

  1 - action done in time         7 - MD notes reason action not taken;
  4 - pt. hosp. or grave illness; 8 - patient refused action required;
  5 - primary provider changed    9 - not required;
  6 - patient moved or died      11 - MR ends before end of time specified
                                  0 - required but not done.
```



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                    Procedure Technical Proficiency

Patient Id:           Procedure:                     Visit Date:

  A biopsy should be taken if the condition described below is found
    with this procedure.  Indicate whether a biopsy was required and
    done.

       0 ◄

                 1 - biopsy done;
                 7 - MD notes reason biopsy not done;
                 8 - patient refused biopsy;
                 9 - biopsy not required;
                10 - no procedure note;
                 0 - no biopsy, reason, or refusal.
```

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                  Procedure Technical Proficiency (continued)

Patient Id:            Procedure:                      Visit Date:

            Is the pathology report in the MR?

            0◂ 1 - pathology report in MR;
               7 - MD notes reason no pathology report;
               0 - no pathology report in MR.
```

```
                           Scope Visualization

Patient Id:            Procedure:                      Visit Date:

            If the procedure note states the anatomic region seen,
            or extent of instrument insertion, code as shown in
            window below.

          0 ◂  ┌──────────────────────────────────────────────┐
               │                                              │
               └──────────────────────────────────────────────┘

                 1-3 - see window
                   7 - MD notes reason could not reach region;
                   8 - patient refused completion of procedure;
                   9 - not applicable to this procedure;
                  10 - no procedure note
                   0 - region not seen, no reason or refusal.
```

PROCEDURES FUNCTION:

FLEXIBLE SIGMOIDOSCOPY

CODE: 01

INDICATIONS: Flag: P1

Review Question: **Indicate if any of these conditions or symptoms are found in the medical record.**

1. Family or personal history of polyps or colon cancer: Sigmoidoscopy can identify or locate intestinal polyps or neoplasms (Harrison's, p. 1214, 1220).
2. Rectal bleeding/guaiac-positive stool (unless due to red meat diet):: Sigmoidoscopy is important in the evaluation of bleeding from the lower gastrointestinal tract (Harrison's, p. 263).
3. Significant change in stool habits lasting ≥ 1 month: A nonspecific change in bowel habits is the most common sign of colon cancer. A patient with constipation or diarrhea should have a complete evaluation that includes a barium enema and sigmoidoscopy (Branch, p. 1250).
4. Inflammatory, vasculitic, or granulomatous bowel disease: Use of sigmoidoscopy helps to identify these problems (Branch, p. 444).
5. Unexplained diarrhea (loose, watery stools, e.g., 4-5/day, for > 1 month or accompanied by pain or weight loss): Sigmoidoscopy and inspection of the mucosa can distinguish inflammatory bowel disease from infectious dysentery (Harrison's, p. 1214).
6. Prior surgery for colorectal cancer: Cancer and/or polyps in the rectosigmoid colon that may be missed by barium enema may be detected by sigmoidoscopy (Harrison's, p. 1213).
7. Rectal examination suggesting rectal mass: If this finding is present, sigmoidoscopy is useful for identifying the lesion and/or obtaining a specimen for biopsy (DE, p. 1214-5, 1221).

SCREENING: Every 3-5 years after 2 negative examinations are done 1 year apart.* A recent study showed screening can reduce mortality from rectal and colon cancer (Levin; Selby et al.)

* This means that DRS would accept 1 sigmoidoscopy in the 2-year review time frame for screening purposes.

FINDINGS REQUIRING IMMEDIATE TRANSFER TO HOSPITAL/ER: **Flag: P2**

Review Question: Look ahead in the medical record and indicate if there is evidence that the appropriate action or referral described below was initiated in the time specified.

1. Frank bleeding or pain after procedure.

Flexible Sigmoidoscopy (cont'd) CODE: 01

BIOPSY REQUIRED: (performed by self or obtained by referral): **Flag: P3**

Review Question: Indicate if a biopsy was required and done.

1. Polyp or other mass detected: Excision followed by histologic examination is the most effective way to rule out cancer within a polyp or other bowel mass (Harrison's, p. 1221).

2. Inflammatory bowel disease: Endoscopic examination is not always indicated for patients with inflammatory bowel disease. However, this procedure can aid in differentiating Crohn's disease from ulcerative colitis. Patients who have had ulcerative colitis for ten or more years have an increased risk of colon cancer and should be monitored by repeated endoscopic examination (Harrison's, p. 1221).

3. Vasculitic bowel disease (e.g., polyarteritis nodosa): Although this item emerged in the criteria development process, it has not been documented.

APPROPRIATE RESPONSE TO PROCEDURE FINDINGS: **Flag: P4**

Review Question: Is the pathology report in the medical record?

1. Detection of polyps, inflammatory or vasculitic bowel disease.

   Initiate plan for treatment OR watchful waiting OR further workup.

   Time Frame: 2 weeks

2. Abnormal study with suspected cancer.

   Referral for further evaluation.

   Time Frame: 2 weeks

3. Biopsy confirms cancer.

   Refer for definitive treatment.

   Time Frame: 1 week

AREA VISUALIZED BY SCOPE: **Flag: P5**

Review Question: Does the procedure note state the anatomic region seen or extent of instrument insertion?

1. Area visualized is recorded in centimeters (to be reported as the mean distance reached, as shown below).

   <15 cm
   15-25 cm
   >25 cm

COLONOSCOPY

CODE: 02

INDICATIONS:

Flag: P1

Review Question: Indicate if any of these conditions or symptoms are found in the medical record.

1. Family or personal history of familial polyposis syndrome or colon cancer: Sometimes carriers of the dominant familial polyposis gene can be detected by colonoscopy before diagnosis is made by barium enema and sigmoidoscopy. Any patient who has a filling defect revealed by barium enema should be evaluated by colonoscopy (Harrison's, p. 1221). Colonoscopy may detect polyps or carcinoma that barium enema failed to detect. Patients who have had colon cancer should have repeated colonoscopy for surveillance of the disease (Branch, p. 1250-1).

2. Rectal bleeding/guaiac-positive stools (unless due to red meat in diet): Bleeding is an indication for colonoscopy. Common causes of bleeding are adenomatous polyps, adenocarcinoma, and Crohn's disease (Branch, p. 1250; Harrison's, p. 1221).

3. Significant change in stool habits persisting >1 month: A nonspecific change in bowel habits is the most common sign of colon cancer. Alterations in bowel habits of an older person, if persistent and representing a definite change, should be evaluated by barium enema and proctosigmoidoscopy. If these procedures do not identify the problem, colonoscopy should be performed (Branch, p. 1250; Harrison's, p. 257).

4. Inflammatory, vasculitic, or granulomatous bowel disease: Although colonoscopy is not routinely indicated for patients with inflammatory bowel disease, it can be useful for presurgical evaluation. Moreover, because of the increased risk of carcinoma, patients who have had ulcerative colitis for more than 10 years should have colonoscopy at regular intervals so that any malignancy may be detected while still curable (Harrison's, p. 1221).

5. Unexplained diarrhea (average of >4-5 loose, watery stools/day for >1 month) or accompanied by pain or weight loss: Since diarrhea may be the initial sign of colon cancer, if it persists the patient should have a complete GI evaluation, including colonoscopy (Branch, p. 1250).

6. Prior surgery for colon cancer: Colonoscopy may detect cancer recurrence and differentiate it from benign conditions (Harrison's, p. 1221).

7. Narrowing or stricture noted on barium enema: All filling defects visualized by barium enema should be evaluated by colonoscopy; diagnosis by x-ray may not be possible (Harrison's, p. 1221).

8. History of benign polyps or sigmoidoscopic finding of neoplastic polyp: The patient with this history is at increased risk of developing additional polyps or cancer and therefore should be evaluated by colonoscopy (Branch, p. 1247, 1251; Harrison's, p. 1221).

FINDINGS REQUIRING IMMEDIATE TRANSFER TO HOSPITAL/ER:

Flag: P2

Review Question: Look ahead in the medical record and indicate if there is evidence that the appropriate action or referral described below was initiated in the time specified.

1. Frank bleeding or severe pain: Hemorrhage and perforation are the main complications of colonoscopy (Harrison's, p. 1221).

Colonoscopy (cont'd) **CODE: 02**

BIOPSY REQUIRED: (either performed by self or obtained by referral): **Flag: P3**

Review Question: Indicate if a biopsy was required and done.

1. Detection of polyps or other mass: Removal and histopathology are recommended to rule out neoplasia (Harrison's, p. 1221).

2. Inflammatory bowel disease: Because of the association between neoplasia and inflammatory bowel disease, periodic biopsy is recommended for patients with this condition (Harrison's, p. 1221).

3. Vasculitic bowel disease (e.g., polyarteritis nodosa): Vasculitis of the large arteries of the intestine can lead to infarction, while vasculitis of the small arteries can cause hemorrhage and ulceration. Colonoscopy can aid in identifying these pathologies (Harrison's, p. 1288).

APPROPRIATE RESPONSE TO PROCEDURE FINDINGS: **Flag: P4**

Review Question: Is the pathology report in the medical record?

1. Detection of polyps, inflammatory or vasculitic bowel disease.

   Initiate plan for treatment OR watchful waiting OR further workup.

   Time Frame: 2 weeks

2. Detection of suspected cancer.

   Refer for further evaluation.

   Time Frame: 2 weeks

3. Biopsy confirms cancer.

   Refer for definitive treatment.

   Time Frame: 1 week

AREA VISUALIZED BY COLONOSCOPE: **Flag: P5**

Review Question: Does the procedure note state the anatomic region seen or extent of instrument insertion?

1. Cecum, right, transverse, and descending colon: The interior of entire length of the colon can be visualized by colonoscopy (Harrison's, p. 1221).

PREVENTION FUNCTION:

BLOOD PRESSURE: **Flag: S1**

Review Question: Did the medical record show that the following prevention/screening activities were done at least once in the two-year review period?

Blood pressure measurement at least once in two-year period.

The Joint National Committee on Detection, Evaluation, and Treatment of Hypertension recommends routine blood pressure measurement at least once every two years (U.S. Preventive Services Task Force, p. 25).

INFLUENZA IMMUNIZATION: **Flag: S2**

Review Question: Did the medical record show that the following prevention/screening activities were done at least once in the two-year review period?

Influenza immunization at least once in two-year period.

Annual influenza immunization is recommended for all persons 65 or older (Harrison's, p. 474; U.S. Preventive Services Task Force, p. 363; Merck, p. 917).

MAMMOGRAM: **Flag: S3**

Review Question: Did the medical record show that the following prevention/screening activities were done at least once in the two-year review period?

Mammogram performed at least once for women under the age of 75 in two-year period.

> An annual mammogram is recommended for women aged ≤75 (U.S. Preventive Services Task Force, p. 363).

BREAST EXAMINATION: **Flag: S4**

Review Question: Did the medical record show that the following prevention/screening activities were done at least once in the two-year review period?

Breast exam done at least once for women in two-year period.

> The effectiveness of clinical examination of the breast, combined with mammography, has been shown by several studies (U.S. Preventive Services Task Force, p. 39-46). DRS recommends that this examination be done once in the two-year period.

Followup of Hospitalization or Consult

Patient ID: Visit Date:

0 ◂ Look ahead in the medical record and indicate if there was any mention of the hospitalization or consult by the provider, or if the medical record contains a consult note or discharge summary.

Look ahead: to end of MR

1 - documentation of hospitalization or consult in Medical Record
5 - primary provider changed
6 - patient moved or died
0 - none of the above

Follow-up of Significant Findings

Patient ID: Visit Date:

0 ◂If any mass, bleeding or weight loss, look ahead in the medical record for evidence of followup (if more than one action, score the lowest number, if more than one applies).

Look ahead: 3 months

1 - action, plan or mention of mass or lump
2 - action, plan or mention of bleeding
3 - action, plan or mention of weight loss
4 - patient hospitalized or grave illness
5 - primary provider changed
6 - patient moved or died
7 - MD reason why no followup of significant findings;
8 - PT refused why no followup of significant findings;
11 - MR ends before end of time specified
0 - none of the above

FOLLOW-UP FUNCTION:

FOLLOW-UP HOSPITAL OR CONSULT:

Flag: F1

Review Question: Look ahead in the medical record and indicate whether the following criteria were met.

1. If there is evidence in the medical record that the patient had a hospitalization or a consultation, is there a hospital discharge summary (or consultant report) OR a note by the physician summarizing the hospitalization (or consultation)?

FOLLOW-UP OF SIGNIFICANT FINDINGS:

Flag: F2

Review Question: Look ahead in the medical record for evidence of follow-up of the following criteria.

If there is evidence of significant findings in the record:

- mention of new lump/mass/lesion
- mention of unexplained gastrointestinal bleeding
- mention of unexplained urinary bleeding
- mention of sudden unexplained weight loss

is there a note indicating continuing attention to the problem within a time frame specified by the physician OR if no time specified, within 3 months?

ABBREVIATIONS USED

ABFP: American Board of Family Practice (see References)
ACE: angiotensin-converting enzyme
ADA: American Diabetes Association (see References)
ALT: serum alanine aminotransferase (formerly serum glutamic-pyruvic transaminase or SGPT
AST: serum aspartate aminotransferase (formerly serum glutamic-oxalacetic transaminase or SGOT
ANA: antinuclear antibody
BP: blood pressure
CAD: coronary artery disease
CBC: complete blood count
CHF: congestive heart failure
COPD: chronic obstructive pulmonary disease
CT: computed tomography
DE: AMA's *Drug Evaluations, Annual 1991* (see References)
DM: diabetes mellitus
ECG: electrocardiogram
ENT: ear, nose, and throat specialty physician
ER: emergency room
ESR: erythrocyte sedimentation rate
FUO: fever of unknown origin
GI: gastrointestinal
G6PD: glucose-6-phosphate dehydrogenase
Harrison's: Wilson et al. (see References)
HgbA1C: hemoglobin A1C
HCT: hematocrit
HDL: high-density lipoprotein (i.e., bound to cholesterol)
HEENT: head, eyes, ears, nose, and throat specialty physician
HIV: human immunodeficiency virus
HTN: hypertension
IDDM: insulin-dependent diabetes mellitus
IVP: intravenous pyelogram
IHD: ischemic heart disease
JNC: Joint National Committee Report (see References)
JVP: jugular venous pressure
LDL: low-density lipoprotein (i.e., bound to cholesterol)
MCV: mean corpuscular volume
NIDDM: non-insulin-dependent diabetes mellitus
NSAIDs: nonsteroidal antiinflammatory drugs
OA: osteoarthritis
PDR: *Physician's Desk Reference* (see References)
PE: physical examination
PPD: purified protein derivative (tuberculin test)
SGOT: serum glutamic-oxalacetic transaminase (now known as AST)
SGPT: serum glutamic-pyruvic transaminase (now known as ALT)
WBC: white blood cells or white blood cell count

DEFINITIONS

Hypokalemia: serum potassium <3 meq/L
Hyperkalemia: serum potassium >5.7 meq/L
Hyponatremia: serum sodium <130 meq/L
Hypernatremia: serum sodium >145 meq/L
Hypoglycemia: serum glucose <40 mg/dL
Hyperglycemia: serum glucose >140 mg/dL (if known to be fasting) or >250 mg/dL (if not known to be fasting) in a patient not known to be diabetic
Hypercalcemia: serum calcium >12 mg/dL
Hyperuricemia: serum uric acid >10 mg/dL
Liver impairment: For purposes of the DEMPAQ review system, liver impairment is defined as abnormal liver function tests as follows: ALT (SGOT) >27 U/L; AST (SGPT) >21 U/L; serum alkaline phosphatase >39 U/L; serum bilirubin >1 mg/100 mL; serum albumin >3.5 g/100 mL. (Note: Liver impairment may also be manifest as abnormal results in any one of several measures that indicate deficient liver function (e.g., lipids, albumin, globulins, clotting factors, or bilirubin in serum; blood ammonia; or serum enzymes such as aminotransferases, alkaline phosphatase, 5'-nucleotidase, gamma-glutamyl transpeptidase).
Renal impairment: BUN >50 mg/dL or serum creatinine >2.5 mg/dL

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DATE RULES

STUDY PERIOD: JULY 1, 1989 TO JUNE 30, 1991

ITEM	RULE
Prevention/Screening 1. Flu vaccine 2. BP 3. Breast Exam (women) 4. Mammogram (women < 75 years)	Note if any of these have been done any time in the two year review period.
Tests	No tests are reviewed on the first visit. Test results which are not a part of a visit note should be entered in the proper chronology between visits.
Definitions	
1. Annual	The test or action should be done within the first 13 months of the beginning of the MR. If it is done before the end of the first year, it should be repeated within 13 months.
2. Q. 4-6 months	The test or action should be one as stated (every 4, 5, or 6 months) with a leeway of +/- two weeks.
3. Q. 1-3 months	The test or action should be done as stated (every 1, 2, or 3 months)with a leeway of +/- one week.
4. Once	The test or action should be done once in the two year study period.

WHAT TO REVIEW

ITEM	RULE
Follow up items: *Hospital Generated Records (Discharge Summaries/Hospital History and Physical), and Consultant Notes*	The hospital generated record or consultant note is not reviewed. Information contained in these documents is used to "close the loop" for other parts of the review. Information found in a hospital generated record or consultant note may be used as evidence to justify something else you are reviewing (e.g. A diagnosis of hypertension made in the hospital would justify the prescription for hypertensive medications made several months later). Do not review drugs found in a hospital generated record or consultant note **unless** they have been later re-affirmed by the physician under review. When they have been re-affirmed, these drugs should be reviewed and given the status of 3 to indicate that they were started in the hospital or by another physician. **Do not review** diagnoses (old or new), tests or procedures that originate in a hospital generated record (e.g.: Discharge Summary or Hospital History and Physical) **and/or** consultant note. Even if this is the first mention of the diagnosis, etc.
Complaints	Do not review complaints. *Exception:* If you note a complaint of interest and you are **not** doing RDA on this visit, enter the complaint number **only** and use the F2 key to pass up the remaining forms.
Diagnoses	The **only** diagnosis which may be inferred is a diagnosis of diabetes and only if the patient is receiving insulin. The diagnoses to be reviewed are those that are stated in the visit note. **Do not** review diagnoses which are found on x-ray reports, hospital generated records or consultant summaries.
Tests	Only review tests with abnormal results. Tests are reviewed only once even if they continue to be abnormal.

What to review, con't

ITEM	RULE
Tests, con't	In the cases of EKG and x-rays; if the report does not state WNL it must be considered abnormal. This holds true even if it appears to be "normal" considering the patients medical condition. If the abnormality listed on an EKG or x-ray is not clearly one of the options listed on the form, chose response #4 "Abnormality not listed above."
U/A Dip	Review of U/A Dip: A "trace" result is **not** considered abnormal. Any use of + indicates an abnormality.
Procedures	Procedures reviewed are: Sigmoidoscopies and Colonoscopies. All procedures are reviewed even if they are normal. Initiate a review of a procedure even if it is not done by the physician under study. You will have the option to mark that it was done by another physician.
Drugs	Each type of drug is reviewed only once. Drugs mentioned in the first visit note are entered with a status of "old". Make note of timeframes on each of the drug review forms, these vary from form to form and between drugs of different status.

HOW TO REVIEW

ITEM	RULE
Visit Date	May be an actual visit or another type of contact, a notation about the patient or some other documentation inserted in the MR. Only enter visit dates that contain clinical information that should be reviewed by DQRS.
VISIT TYPE *Choose one of three:* 1. *Office*	Encounter between the patient and the primary physician, his/her assistant or nurse; or his/her partner in group practice. May take place in the office, clinic or an emergency care setting.
2. *Telephone*	Only enter telephone calls that contain clinical information to be reviewed by DQRS. Do not enter prescription refill calls.
6. *Test Results Only*	Tests which are reviewed by DQRS but are not linked to a patient visit. These may be laboratory or imaging reports (see DQRS worksheet).

DIAGNOSIS SYNONYMS FOR DQRS

ITEM	RULE
Congestive Heart Failure	Heart failure
Chronic Obstructive Pulmonary Disease	Emphysema Chronic bronchitis Chronic obstructive lung disease COLD CAO **Does not include chronic asthma.**
Diabetes Mellitus	IDDM NIDDM GDM Anything with the word "diabetes" in it, except "rule-out diabetes" or "r/o diabetes." Type I Type II
Hypertension	High blood pressure HBP HASCVD HCVD **Does not include ↑BP.**
Ischemic Heart Disease	Coronary artery disease CAD Coronary atherosclerosis ASCVD ASHD
Osteoarthritis — "Arthritis" without a modifier	OA Degenerative joint disease DJD

Chapter 5
Claims Reports

Abstract

This chapter describes the claims reports designed for participant and nonparticipant feedback. It also presents the results of two evaluations of these reports: one probing the physician's understanding of the reports and one evaluating the usefulness of the reports to the physician.

Two types of profiles were fed back to physicians: condition-specific and office practice. The condition-specific profiles were prepared at the specialty level; no individual level data were prepared. The office practice profile was formulated to reflect an individual's practice. Non-DEMPAQ physicians who attended the workshop did not receive the office practice profile.

The results of a worksheet completed by attendees during the workshop confirmed the face validity of the profile measures. Table comprehension was generally excellent, with one problem area emerging. Physicians apparently had difficulty grasping the statistical concept of confidence intervals and applying it to the data presented in the profile.

Results of an evaluation questionnaire demonstrate that physicians found the condition-specific reports very informative and somewhat provocative. The office practice profile was well received.

A complete example of an individual's report book is shown as Appendix 1. Appendix 2 displays the instructional material developed for the claims workshop session.

The methodology for developing the claims profiles has been described elsewhere (see *Final Report*, Chapters 4 and 5). This chapter describes the profile reporting format and presents the results of two evaluations of the report.

Types of Profiles

Two types of profiles were produced for physician feedback:

- Condition specific profile; and
- Office practice profile.

The condition-specific profiles present information about the use of services that contribute to good management of elderly patients with one of six common conditions (diabetes, hypertension, congestive heart failure, ischemic heart disease, osteoarthritis, and chronic obstructive pulmonary disease). Services are divided into "recommended care," i.e., care that is recommended for all patients, and "limited use care," care that is recommended for a subset of the population. The profile is constructed at the specialty level. The number of cases per physician is too small to permit production of a profile at the individual physician level.

The office-practice profile summarizes data about the physician's patients, case-mix, visits by patients to this and other doctors, distribution of visits (brief, extended, etc.), distribution of ancillary test use and hospitalizations, and primary patient characteristics (age and gender distribution). This report is prepared at the individual doctor level.

The office practice profile was developed to reinvent the concept of the utilization based physician profile. Often, a cost and utilization profile may be only one page with a summary statement declaring if the physician is under or over an average based on their peers. We sought to update this model of profiling with the introduction of four innovations. First, we identified a primary care source (PCS) as a proxy for a patient's primary care "gatekeeper." A complete description of the PCS assignment algorithm is provided in Chapter 5 of the *DEMPAQ Final Report*. Second, we case-mix adjusted any comparisons of physicians-specific cost or utilization to their peers. Third, we took full advantage of the ability to link Part A and Part B claims to more fully describe the different cost components of a hospital admission. Fourth, we provided a detailed table of the components (listed in Table 14 of the profile) of a PCS's patient population total resource use. The care taken to develop the profiles was acknowledged by several physicians who appreciated the completeness of the profile's description of their practice. These physicians noted that the information contained in the profile was useful to them simply because they could not construct nearly as complete a profile of their patients "total" care with their own records.

Claims profiles were prepared for both physicians who submitted records (DEMPAQ participants) and those who attended the workshop without having submitted records (non-DEMPAQ participants). The profiles for the DEMPAQ participants were based on their own claims data. The profiles for the non-DEMPAQ participants were based on statewide specialty-specific data.

Claims Worksheets

Purpose and Use

To involve the physicians in a directed dialogue about the claims data, attendees were asked to complete a worksheet during the claims data session. The first two pages of the worksheet asked for their estimates about how often a patient with a particular condition *did not* receive the services listed on the page. They were also asked to rate the importance of the service for the care of the patient. The purpose of the exercise was to stimulate thought about the frequency of selected services. In the next segment of the workshop, physicians compared their answers to data from the claims profile.

After being taught how to read the claims reports, the attendees completed the remainder of the worksheet. The questions asked the physician to locate or derive an answer from the profile book and to compare the actual answer to his or her expectation of the answer. Using the completed worksheets, the session instructor then led a directed discussion about the implications and interpretation of the findings (see Appendix 2 for the instructor's guide).

Results: Face Validity

Tables 1 and 2 show the results of the face validity evaluation by the workshop attendees of the diabetes and hypertension profiles.

Table One
Diabetes Face Validity Results
From Workshop Attenders, All Three States

Service	N	Percent of patients who do not receive service	Percent of Respondents marking agree or strongly agree	Importance of service to diabetic patients (on a scale of 1, not important to 5, very important)
Recommended Care		Average (range)		Average (range)
Office visits (general medical visits)	38	10.4% (0% - 50%)		4.7 (3 - 5)
Hemoglobin A1C tests	39	51.9% (0% - 100%)		3.7 (1 - 5)
Urinalysis	37	25.9% (0% - 85%)		3.9 (2 - 5)
Triglycerides	39	25.3% (0% - 100%)		3.5 (1 - 5)
Total cholesterol	39	20.8% (0% - 50%)		3.8 (2 - 5)
HDL cholesterol	39	26.4% (0% - 100%)		3.7 (1 - 5)
Ophthalmology visits	39	36.4% (0% - 90%)		4.1 (1 - 5)
Limited Use Care				
Blood glucose	36	7.1% (0% - 50%)		4.7 (2 - 5)

Table Two
Hypertension Face Validity Results
From Workshop Attenders, All Three States

Service	N	Percent of patients who do not receive service	Importance of service to diabetic patients (on a scale of 1, not important to 5, very important)
Recommended Care		Average (range)	Average (range)
Office visits (general medical visits)	37	10.7% (0% - 75%)	4.8 (3 - 5)
Limited Use Care			
Creatinine	39	25.2% (0% - 75%)	4.2 (2 - 5)
Triglycerides	39	28.9% (0% - 100%)	3.5 (1 - 5)
Total cholesterol	38	23.9% (0% - 90%)	3.7 (1 - 5)
Serum potassium	36	7.1% (0% - 80%)	4.7 (1 - 5)

The face validity questions asked the physicians to judge how important it was for patients with each of the conditions to receive the listed services. The findings are summarized below:

- Office visits for each condition were consistently ranked as among the most important services (mean = 4.7 and 4.8).
- Two limited use items were ranked as important as office visits. These were blood glucose for diabetics (importance = 4.7) and serum potassium for hypertensive (importance = 4.7).
- Creatinine for hypertensive patients and ophthalmology visits for diabetics were also viewed as important services (importance = 4.2 and 4.1).
- The greatest variation among respondents regarding whether or not their patients receive services were HgbA1C, HDL cholesterol and triglycerides (both diabetes and HTN profiles). In all three cases, estimates of the percent of patients who did not receive services ranged from 0 to 100%. The importance of these services was rated by participants as marginal at 3.5 to 3.7.
- Respondents ranked HgbA1C tests as important as HDL cholesterol or total cholesterol measurements for diabetic patients; however, they estimate that they provide one half as many HgbA1C tests as cholesterol tests (52% do not receive HgbA1C tests while 21-26% do not receive cholesterol tests).
- The maximum importance assigned to a services was consistently 5—"very important."

Results: Table Comprehension

Tables 3 and 4 show the whether the physicians could read and manipulate the data in the claims profile tables after some classroom instruction.

Table three
Can physicians read and interpret the profile reports?
Diabetes Profile

Question	N	Percent of Respondents with correct answer
1. According to Table 1, what is the rate of patients receiving one or more HbA1 tests in the study period?	17	88%
2. What percent of diabetic patients had *no* ophthalmologic examinations in the one year study period?	17	88%
3. What percent of diabetic patients do not receive at least one blood glucose in the study period?	17	100%
4. According to Table 2, what is the most frequent complication of diabetes leading to hospitalization	17	100%
5. What is the average number of days until an office visit for patients with lower extremity amputation?	17	100%
6. Regarding Table 3, what percent of diabetic patients saw a podiatrist in the study year?	17	88%

Table four
Can physicians read and interpret the profile reports?
Hypertension Profile

Question	N	Percent of Respondents with correct answer
1. According to Table 1, what percent of hypertensive patients did not have a visit in the first six months of the study period?	41	95%
2. What percent of hypertensive patients had a serum potassium level in the study year?	42	90%
3. Compare the rate of triglycerides in Tables 1A and 1B. Is the results statistically significant?	39	74%
5. Comparing Table 1 and 1C, what percent of all hypertensive patients also have IHD?	37	92%
6. Are hypertensive patients with IHD more or less likely to have total cholesterol measured?	32	72%
7. Regarding Table 3, what percent of hypertensive patients visited cardiologists in the study year?	29	100%

These data suggest that:

- Workshop participants demonstrated their ability to understand most aspects of the claims profiling tables.
- Comparing two tables to determine statistical significance posed a problem for 28% of the respondents. This finding supports the impression received during the workshops that statistical significance and confidence intervals were foreign subjects to some of the clinicians.
- Comparing two tables asking whether patients with both hypertension and ischemic heart disease had greater or fewer numbers of cholesterol tests proved difficult. We suspect that the readers simply compared the percentages without taking into account that a lower percentage with zero services meant that more patients were receiving care.
- Based on the comments of the physicians at the workshops, the "percent with zero services" column was confusing.

Usefulness of the Claims Profiles

The last portion of the CME workshop held in each state was set aside to allow the workshop attendees to peruse their own reports. During this time, they were asked to complete evaluation questionnaires about the reports. Tables 5 and 6 display the results of the overall evaluation of the claims reports and the office practice profile. The sample size for the office practice profile evaluation is smaller than for the general evaluation because only DEMPAQ participants received the individualized office practice profile.

Table five
General Evaluation of Claims Profile Reports

	N	Percent agreeing or strongly agreeing
I found the tables easy to understand.	42	45%
I found the facing (left-hand) page text easy to understand.	40	63%
I found the tables informative.	41	64%
I found the data presented in the tables provocative.	41	49%
I found the stratification by age in the condition specific profiles useful.	41	56%
I found the stratification by co-morbidities in the condition-specific profiles useful.	41	63%
I found the office practice profile useful.	38	63%

Table six
Office Practice Profile

	N	Percent agreeing or strongly agreeing
This profile accurately represent my practice	25	60%
There were too many tables in the Office Practice Profile	27	30%
There were too few tables in the Office Practice Profile	26	27%
I found the facing page text helpful	27	74%
I found the information for my specialty on the facing page interesting.	27	89%
I believe graphs would enhance the profile presentation.	27	56%

These data may be summarized as follows:

- Although less than half of the respondents found the tables easy to understand, they did find the data in the tables informative.
- For the condition-specific profiles, the physicians found the stratification by co-morbidities more useful than the stratification by age.

- In general, physicians found the office practice profile useful (63% agreed).
- For the office practice profile, almost two thirds of the physicians reported that the profile appeared to accurately represent his or her practice. Some of the physicians who did not find the profile representative complained that the caseload figures appeared either too low or too high. One possible explanation for this relates to the issue of group practices that is described in the *Final Report* (Chapter 4).
- The facing page format appears to have been successful with the majority of readers finding the text and data on the facing page interesting.

Workshop attendees were asked to evaluate only two of the condition-specific profiles: diabetes and hypertension. This constraint was necessary due to the limited time during the workshop to review the reports. For selected findings, the physician was asked to consider the following:

Are the data informative?	❖ Do they provide new information? ❖ Confirm something suspected but not previously verified?
Is the finding provocative?	❖ Does it encourage you to discuss the finding with colleagues? ❖ Look further in literature? ❖ Examine your own records?
Is the finding believable?	❖ Can you trust the data? ❖ Do the data represent a true finding or are there too many other explanations for the number?

These questions were intended to assess the usefulness of the report data to practicing physicians.

Table Seven
Diabetes Profile Evaluation

Finding	Percent agreeing or strongly agreeing			
	N	Data are informative	Finding is provocative	Finding is believable
The rate of patients receiving one or more HbA1 tests in the study period.	39	82%	68%	68%
The percent of diabetic patients had *no* ophthalmologic examinations in the one year study period	38	84%	63%	61%
The percent of diabetic patients do not receive at least one blood glucose in the study period?	37	73%	57%	68%
Rate of various complications of diabetes leading to hospitalization	37	70%	51%	57%
Length of time between discharge and an office visit for patients with lower extremity amputation	37	70%	65%	43%
Percent of diabetic patients seeing a podiatrist in the study year.	37	68%	43%	51%

Table Eight
Hypertension Profile Evaluation

Finding	Percent Agreeing or Strongly Agreeing			
	N	Data are informative	Finding is provocative	Finding is believable
Percentage of hypertensive patients without a visit in the first six months of the study period.	38	71%	50%	58%
The percentage of hypertensive patients with a serum potassium level in the study year.	38	63%	55%	64%
The differences in service use between hypertensive patients ages 65-79 and hypertensive patients ages 80 and older	38	50%	37%	66%
Hypertensive patients with IHD being more likely to have total cholesterol measured.	38	63%	42%	68%
The rate of TIA versus that of cerebrovascular accidents.	36	69%	49%	61%
Percentage of hypertensive patients who visited cardiologists in the study year.	36	55%	42%	49%

Overall:

- Physicians found the data more informative than provocative.
- One-third to one-half of the physicians did not find the data believable. This occurred despite explicit training about data limitations and interpretation during the workshop.
- Physicians found the diabetes data more informative and provocative than the hypertension data.
- The most provocative diabetes findings were the percentage of patients with HgbA1C tests, the percentage of diabetics without an eye exam and the length of time between discharge and an ambulatory visit for patients with an amputation (it should be noted that physicians did not particularly believe the latter finding).
- The most provocative hypertension findings were the percentage of patients without a visit during the first six months of the study period and the percentage of patients with a serum potassium test.

Summary and Recommendations

Based on these data, we have succeeded in designing educational reports, i.e., reports that inform the practicing physician. Two-thirds to four-fifths of the workshop attendees rated specific findings as informative. One-half to two-thirds of the workshop attendees also found the reports useful; the reports stimulated a desire to respond to the data (data are provocative). A similar percentage found the data believable.

These findings presented in this chapter lead to several design recommendations:

- Improve the presentation of statistical information as at least one quarter of the physicians had difficulty determining statistically significant findings;

- Consider alternative ways of presenting the data in Table 1 of the condition-specific profiles. Workshop attendees had trouble with the "percent with zero services" column; and
- Incorporate the data *caveats* that were discussed at the workshop into the profile report to enhance data believability.

Appendix 1

DEMPAQ CLAIMS REVIEW SYSTEM (DCRS)

Reports from DEMPAQ Claims Review

Internal Medicine

INTRODUCTION

The first profile report included here is for office practice. The condition-specific profiles provide information on the ongoing monitoring of Medicare patients with six conditions:

- Diabetes
- Hypertension
- Ischemic Heart Disease
- Congestive Heart Failure
- Chronic Obstructive Pulmonary Disease
- Osteoarthritis

DATA INCLUDED

This report is based on all Medicare claims submitted from July 1, 1990–June 30, 1991, for patients aged 65 years or older.

Patients' data are **included** only if they had an office or emergency room visit during the year with a physician within the specialties of internal medicine, family practice, or general practice in your state.

Patients' data are **excluded** if:

- All care was received in inpatient settings;
- All visits were to specialist physicians;
- All visits were to physicians out of the state;
- Patient had nursing home care in two or more consecutive quarters.

OVERVIEW OF TABLES

- **Table 1** shows the percent of patients receiving each of a list of tests, visits and procedures 0, 1–2, 3–5, or over 5 times per year. The services are divided into two sets:

  Recommended Care represents the minimal level of services that should be provided to a patient.

  Limited Use Care depends of the patient's condition and the physician's discretion. This category includes services recommended for a subset of the population with the condition, as well as procedures that should be provided sparingly for all patients with the condition.

- **Table 2** shows hospital admissions for selected complications and days from discharge to follow-up visits.

- **Table 3** shows the distribution of services provided by the assigned primary care physicians, other general medicine physicians and selected other specialists. The assigned primary care physician is that primary care physician who provided more visits than any other primary care physician for each patient.

BACKGROUND INFORMATION

In the introduction to each condition, we provide information on:

- Procedures codes (CPT-4), diagnosis codes (ICD-9-CM), or other data sources used to identify tests, procedures, hospitalizations or providers
- Notes about the tests, procedures, visits, or hospitalizations reported
- Abbreviations used in the report
- References

DEMPAQ CLAIMS REVIEW SYSTEM

DEMPAQ OFFICE PRACTICE PROFILE
STATE OF

July 1, 1990 - June 30, 1991

[PHYSICIAN NAME:
[PHYSICIAN ID:

OFFICE PRACTICE PROFILE - INTRODUCTION

Data Included:

This report is based on all Medicare claims submitted between July 1, 1990 - June 30, 1991, for patients aged 65 years and older.

Patients' data are included only if they had an office or emergency room visit during the year with a physician within the specialties of internal medicine, family practice, or general practice in your state.

Patients' data are excluded if:

- All care was received in inpatient settings
- All visits were to specialist physicians
- All visits were to physicians out of state
- Patients had nursing home care in two or more consectutive quarters.

PROFILE FEATURES:

This report is based on all Medicare Claims submitted to the Health Care Financing Administration's carriers and intermediaries for services delivered to your patients. Information is provided on:

- Office visits to general medicine and specialist physicians (tables 1-4)
- Your patients' age, gender and types of co-morbidities (tables 5-6)
- Inpatient admissions (tables 8-10)
- Clinical laboratory services (table 11)
- X-Ray and Imaging Services (table 12)
- Other Diagnostic Services (table 13)
- Patient's expected resource given their co-morbidities (tables 7,10,14)

CATEGORIES OF PATIENTS

PRIMARY PATIENTS: Patients for whom you were their most frequent source of general medical care. For example, a patient who visited you twice, internist B once and a cardiologist twice would be designated your PRIMARY PATIENT.

NON-PRIMARY PATIENTS: Patients who had at least one visit to you but mode a greater number of visits to another general medicine physician.

CATEGORIES OF PHYSICIANS

GENERAL MEDICINE PHYSICIAN: Physicians within the specialties of Internal Medicine, Family Practice, and General Practice. These designations include both allopathic and osteopathic physicians. Primary care group practices are included here.

SPECIALIST: All non-general medicine physicians, including specialty group practices.

OTHER: Physicians of unknown specialty, or multi-specialty group practices.

HOW TO READ THE TABLES

Designed to be read as a booklet, this profile describes the services received by your patients on the right page, and it presents your specialty's statewide averages on the facing left page.

Brief explanations of the methods used to measure resource use and patient case-mix are included on the facing page of each table. (A more detailed description of methods is available upon request.)

VISITS BY PRIMARY AND OTHER PATIENTS

Table 1 on the facing page shows the number of Medicare patients, both primary and non-primary, seen by you. The number of visits provided to the patients you saw is also shown.

The table below represents the state-wide averages for all physicians in your specialty: Family Practice

Medicare Group	No. of Patients	% of Patients	No. of Visits	% of Visits
All Medicare patients	87532	100.0	313229	100.0
Your Primary Patients	69490	79.4	284636	90.9
Your Non-Primary Patients	18042	20.6	28593	9.1

VISITS BY PRIMARY AND OTHER PATIENTS

PROVIDER ID:

Table 1. Visits to your office by Medicare patients.

Medicare Group	No. of Patients	% of Patients	No. of Visits	% of Visits
All Medicare patients	295	100.0	1047	100.0
Your Primary Patients	235	79.7	935	89.3
Your Non-Primary Patients	60	20.3	112	10.7

VISITS BY PRIMARY AND OTHER PATIENTS

Table 2 on the facing page presents more detail on the types of physicians seen by your Medicare patients. How many of your patients were seen by other doctors?

The table below represents the state-wide averages for all physicians in your specialty: Family Practice

	Number of patients	Percent of patients
Primary patients		
TOTAL	69490	100.0
Seen only by you	26404	38.0
Seen by you and others	43086	62.0
- by another general medicine physician	20786	29.9
- by a Specialist	19793	28.5
- by a single- or multi-specialty Group	19159	27.6
- by a non-physician provider	8066	11.6
Non-primary patients		
TOTAL	18042	100.0
Seen by you only once	12335	68.4
Seen by you more than once	5707	31.6

VISITS BY PRIMARY AND OTHER PATIENTS

PROVIDER ID:

Table 2. Patterns of care-seeking by Your Medicare Patients.

	Number of patients	Percent of patients
Primary patients		
TOTAL	235	100.0
Seen only by you	75	31.9
Seen by you and others	160	68.1
- by another general medicine physician	71	30.2
- by a Specialist	79	33.6
- by a single- or multi-specialty Group	67	28.5
- by a non-physician provider	38	16.2
Non-primary patients		
TOTAL	60	100.0
Seen by you only once	38	63.3
Seen by you more than once	22	36.7

VISITS BY PRIMARY PATIENTS

Table 3 on the facing page shows the average percent of visits per patient to you and other physicians. It also indicates the percent of your primary patients in each of the five visit-range categories for visits to you and other physicians. How often did your primary patients see other doctors?

The table below represents the state-wide averages for all physicians in your specialty: Family Practice

Visits by Primary Patients	Average Number of Visits	Patient Distribution by their Visits				
		0 visits	1 visit	2-4 visits	5-9 visits	10+ visits
To you	4.1	0.0	22.6	45.6	24.2	7.6
To all others	2.2	38.0	19.4	27.5	11.7	3.4
TOTAL	6.3					

VISITS BY PRIMARY PATIENTS

PROVIDER ID:

Table 3. Average number of office visits by Your PRIMARY Patients

Visits by Primary Patients	Average Number of Visits	Patient Distribution by their Visits				
		0 visits	1 visit	2-4 visits	5-9 visits	10+ visits
To you	4.0	0.0	21.3	47.7	24.3	6.8
To all others	2.2	31.9	21.7	29.8	14.5	2.1
TOTAL	6.2					

DISTRIBUTION OF PRIMARY PATIENTS' VISITS BY TYPE OF VISIT AND CATEGORY OF PHYSICIAN

The remainder of this report will focus on your primary patients. Table 4 shows the distribution of visits for your primary patients. The data are presented by type of visit provided (e.g., brief, intermediate, extended). The table columns show category of provider: you, other general medicine physicians, specialists, and other (physicians with unknown specialty or multi-specialty group practices. Each cell is the percentage of all visits made by primary patients in each visit/provider category.

NOTE: The listed visit types (e.g. brief, intermediate, extended) is an artifact of the 1990-1991 coding system. Future profiles will reflect changes to visit type codes as appropriate to the year of study.

The table below represents the state-wide averages for all physicians in your specialty: Family Practice

Type of Visit	Total	To You	General Medicine	Specialist	Other
TOTAL:	100.0	65.5	9.7	18.9	5.8
NEW PATIENTS:	9.5	0.9	3.2	4.3	1.1
ESTABLISHED PATIENTS:					
Brief	10.9	6.0	0.6	3.3	1.0
Limited	58.3	44.1	3.9	7.7	2.6
Intermediate	14.0	9.9	1.3	2.3	0.5
Extended	3.5	2.4	0.4	0.5	0.1
Comprehensive	2.6	2.1	0.2	0.2	0.0
Other	1.2	0.1	0.0	0.6	0.4

Please note: Given the time frame of the data, this table uses the old CPT visit categories

DISTRIBUTION OF PRIMARY PATIENTS' VISITS BY TYPE OF VISIT AND CATEGORY OF PHYSICIAN

PROVIDER ID:

Table 4. Percent Distribution of Ambulatory Visits for Your Primary Patients

Type of Visit	Total	To You	General Medicine	Specialist	Other
TOTAL:	100.0	64.3	8.7	21.2	5.8
NEW PATIENTS:	9.9	0.3	3.4	4.9	1.2
ESTABLISHED PATIENTS:					
Brief	13.6	10.2	0.5	2.9	0.0
Limited	62.7	46.3	3.3	8.9	4.3
Intermediate	5.4	3.3	0.9	0.8	0.3
Extended	5.0	4.1	0.5	0.4	0.0
Comprehensive	0.3	0.1	0.1	0.1	0.0
Other	3.2	0.0	0.0	3.2	0.0

Please note: Given the time frame of the data, this table uses the old CPT visit categories

CHARACTERISTICS OF PRIMARY PATIENTS

The next several tables describe the demographic and case-mix characteristics of your primary patients.

Table 5 on the facing page presents the age and gender distributions of your primary patients.

The table below represents the state-wide averages for all physicians in your specialty: Family Practice

Total Primary Patients:	69490
Mean Age:	74.9 years
Range:	65 - 104 years
Percent Female:	62.6%

AGE	Number of Patients	Percent of Patients
65 - 74 years:	36871	53.1
75 - 84 years:	24940	35.9
85 + years:	7679	11.1

CHARACTERISTICS OF PRIMARY PATIENTS

PROVIDER ID:

Table 5. Age and Gender Distribution of Your Primary Patients

Total Primary Patients:	235
Mean Age:	75.8 years
Range:	65 - 97 years
Percent Female:	65.5%

AGE	Number of Patients	Percent of Patients
65 - 74 years:	108	46.0
75 - 84 years:	103	43.8
85 + years:	24	10.2

CHARACTERISTICS OF PRIMARY PATIENTS

In this report the fact that the case-mix of your patients may differ from the case-mix of other physician's patients is partly accounted for by the Johns Hopkins Ambulatory Care Group (ACG) case-mix system (see below). ACGs document the number of different morbidities a patient experiences over a year. To give you a sense of the case-mix of your patient population, Table 6 on the facing page shows the number of different types of co-morbidities your primary patients had.

JOHNS HOPKINS AMBULATORY CARE GROUPS (ACGs)

- The ACG case-mix system provides a conceptually simple, statistically valid, and clinically relevant measure useful in predicting the need for health care services.

- ACGs are similar to DRGs, a case-mix system used for inpatient care, except that the unit of analysis is the entire year's care episode and only ambulatory diagnoses are used to categorize patients.

- ACGs represent a method for grouping your primary patients into one of 51 discrete case-mix categories based on their age, gender and the specific constellation of ICD-9 diagnoses assigned during their ambulatory contacts with the delivery system and documented in the claims forms all physicians submit to Medicare.

- The building blocks of the ACG system are morbidity clusters. Each ICD-9 code has been assigned to a unique cluster based on its clinical characteristics and the resources needed to treat the condition. Table 6 reports the number of these morbidity clusters each of your patients had.

References:

Weiner et. al., Medical Care, May 1991.
Starfield et. al., Health Services Research, March 1991.
(Further information available upon request.)

The table below represents the state-wide averages for all physicians in your specialty: Family Practice

Patient Co-morbidity Summary	Number of Patients	Percent of Patients
No type of medical condition	87	0.1
a single type of medical condition	7071	10.2
2 - 3 types of medical conditions	19730	28.4
4 - 5 types of medical conditions	18460	26.6
6 - 9 types of medical conditions	19588	28.2
10 + types of medical conditions	4554	6.6

CHARACTERISTICS OF PRIMARY PATIENTS

PROVIDER ID: ,

Table 6. Distribution of Your Primary Patients by type of co-morbidities

Patient Co-morbidity Summary	Number of Patients	Percent of Patients
No type of medical condition	0	0.0
a single type of medical condition	13	5.5
2 - 3 types of medical conditions	58	24.7
4 - 5 types of medical conditions	57	24.3
6 - 9 types of medical conditions	82	34.9
10 + types of medical conditions	25	10.6

Co-morbidity categories based on unique diagnostic clusters as determined by the Ambulatory Care Group (ACG) system. For more information on ACGs, see facing page.

EXPECTED SERVICE USE OF PRIMARY PATIENTS

Table 7 on the facing page presents a measure of case-mix intensity for your primary patients. It represents two new concepts: Resource Units and an Expected Service Use Index.

RESOURCE UNITS

Resource Units or (RUs) are measures of health care resource consumption that are independent of the actual procedure charges of a given practitioner and the regional differences of these charges. RUs are based on HCFA's Resource-Based Relative Value Units (RBRVU) fee schedule for ambulatory and outpatient services and Diagnosis Related Groups (DRGs) for inpatient admissions. The same RU is assigned to all services of the same type, regardless of what the provider's charge (or payment) actually was. The RUs do not vary by geographic area. As a result, resource units are not influenced by provider specialty or location. All RUs have been translated to dollar equivalents.

EXPECTED SERVICE USE INDEX

Based on the Ambulatory Care Group (ACG) case-mix categories of your patients, an expected rate of resource use was calculated. The expected use is based on the state-wide averages for all patients in similar case-mix categories. This expected use was calibrated around 1.00, where 1.00 is equal to the overall state-wide average across all case-mix categories for your specialty.

If your patients have an expected service use index of more than 1.00, this indicates that, after taking case-mix into account, your patients can be expected to consume more medical resources, in terms of charges or visits, than a comparable state-wide comparison group.

An expected service use index of less than 1.00 indicates your primary patients can be expected to use fewer resources than the average.

Again, Table 7 on the facing page does not indicate the actual services delivered to your patients; it represents what would be expected, based on the state-wide specialty specific average for patients with similar morbidities.

The table below represents the state-wide averages for all physicians in your specialty: Family Practice

Type of service	Expected Use Index (average = 1.00)
Based on Total Visits	1.00
Based on Total Ambulatory Care[1] RUs	1.00
Based on Total RUs (all settings)	1.00

EXPECTED SERVICE USE OF PRIMARY PATIENTS

PROVIDER ID:

Table 7. Expected Service Use for Your Primary Patients based on their Case-mix

Type of service	Expected Use Index (average = 1.00)
Based on Total Visits	1.14
Based on Total Ambulatory Care [1] RUs	1.16
Based on Total RUs (all settings)	1.19

[1] Ambulatory care is defined as services occurring outside of an inpatient setting, including outpatient services provided by a hospital.

[*] An asterisk indicates that the value is two or more standard deviations above or below the statewide mean of 1.00

HOSPITAL USE BY PRIMARY PATIENTS

The comparison of inpatient and ambulatory service may shed light on the potential substitution of services between these two settings.

Tables 8 through 10 show the number and percent of your primary patients who were hospitalized and the amount of services they used in the hospital. The data are presented for your primary patients' admissions both where you were the attending physician, and where others attended.

The table below represents the state-wide averages for all physicians in your specialty: Family Practice

		Number of Admissions			
	TOTAL	0	1	2	3+
Number of Patients	69490	54846	10359	2922	1363
Percent of Patients	100.0	78.9	14.9	4.2	2.0

HOSPITAL USE BY PRIMARY PATIENTS

PROVIDER ID:

Table 8. Distribution of inpatient admissions among Your Primary Patients

	TOTAL	Number of Admissions			
		0	1	2	3+
Number of Patients	235	177	41	9	8
Percent of Patients	100.0	75.3	17.4	3.8	3.4

HOSPITAL USE BY PRIMARY PATIENTS

Table 9 on the facing page presents four different measures related to primary patients' hospitalization. The first part of table 9 is a distribution of your primary patients' discharge status. The second portion of table describes your primary patients' average total inpatient hospital visits provided by you and other physicians per admission. Finally, a summary of your patients' average length of stay as well as average number of visits per day is included.

The table below represents the state-wide averages for all physicians in your specialty: Family Practice

	TOTAL
Percent of Patients hospitalized (one or more times)	21.1
Of Discharges:	
Percent discharged home	75.6
Percent transferred to SNF	8.4
Percent died in hospital	4.2
Percent other	11.9
Inpatient visits per Discharge	
By you	3.2
By others	4.9
Average length of stay per discharge (days)	8.1
Visits per day in the Hospital	1.0

HOSPITAL USE BY PRIMARY PATIENTS

PROVIDER ID:

Table 9. Discharge Status, Length of Stay, and Inpatient Visits of Your Primary Patients

	TOTAL
Percent of Patients hospitalized (one or more times)	24.7
Of Discharges:	
Percent discharged home	73.9
Percent transferred to SNF	4.5
Percent died in hospital	2.3
Percent other	19.3
Inpatient visits per Discharge	
By you	2.7
By others	5.0
Average length of stay per discharge (days)	6.4
Visits per day in the Hospital	1.2

HOSPITAL USE BY PRIMARY PATIENTS

Table 10 shows the hospital-related resource consumption of your primary patients. Total hospital-related average resource units (RUs) can be compared by hospitalized patient or by admission to your specialty's average. Part A and Part B RU breakdowns are included to give you a sense of what resources are expended on facility (Part A) resources (e.g. room and board charge, facility fees) versus physician services (Part B) billed during the course of a hospitalization.

RESOURCE UNITS

Resource Units or (RUs) are measures of health care resource consumption that are independent of the actual procedure charges of a given practitioner and the regional differences of these charges. RUs are based on HCFA's Resource-Based Relative Value Units (RBRVU) fee schedule for ambulatory and outpatient services and Diagnosis Related Groups (DRGs) for inpatient admissions. The same RU is assigned to all services of the same type, regardless of what the provider's charge (or payment) actually was. The RUs do not vary by geographic area. As a result, resource units are not influenced by provider specialty or location. All RUs have been translated to dollar equivalents.

The table below represents the state-wide averages for all physicians in your specialty: Family Practice

Average Part A resource units:	
Per hospitalized patient	11297.3
Per admission	7835.8
Average Part B resource units (provided in hospital):	
Per hospitalized patient	787.1
Per admission	546.0
Average Total resource units:	
Per hospitalized patient	12084.4
Per admission	8381.8

HOSPITAL USE BY PRIMARY PATIENTS

PROVIDER ID:

Table 10. Total Hospital Resource Consumption of Your Primary Patients

Average Part A resource units:	
Per hospitalized patient	11038.1
Per admission	7275.1
Average Part B resource units (provided in hospital):	
Per hospitalized patient	814.9
Per admission	537.1
Average Total resource units:	
Per hospitalized patient	11853.0
Per admission	7812.2

ANCILLARY SERVICE USE BY PRIMARY PATIENTS: LABORATORY

Table 11 on the facing page shows the distribution of clinical laboratory services provided to your primary patients by both you and other providers. The table presents services and overall resource units used per patient.

The table below represents the state-wide averages for all physicians in your specialty: Family Practice

	TOTAL		Performed by you		By Other Providers	
	Services per patient	RU per patient	Services per patient	RU per patient	Services per patient	RU per patient
TOTAL	8.40	81.16	2.47	16.32	5.93	64.83
Chemistry	3.17	31.01	0.85	4.72	2.32	26.29
Hematology	2.25	16.13	0.69	4.56	1.56	11.57
Other Lab[2]	2.98	34.02	0.93	7.05	2.05	26.98

ANCILLARY SERVICE USE BY PRIMARY PATIENTS: LABORATORY

PROVIDER ID:

Table 11. Distribution of Clinical Laboratory Services for Your Primary Patients

	TOTAL		Performed by you		By Other Providers	
	Services per patient	RU per patient	Services per patient	RU per patient	Services per patient	RU per patient
TOTAL	11.51	107.64	0.81	2.86	10.70	104.78
Chemistry	5.10	49.74	0.36	1.20	4.74	48.54
Hematology	3.02	22.51	0.00	0.00	3.02	22.51
Other Lab[2]	3.39	35.39	0.45	1.66	2.94	33.73

[2] Other Laboratory services are defined as those procedures listed in the CPT-4 ranges of 80000-87999 other than those explicitly described above.

ANCILLARY SERVICE USE BY PRIMARY PATIENTS: X-RAY/IMAGING

Table 12 on the facing page shows the distribution of X-Ray and common imaging procedures provided to your primary patients by both you and other providers. The table presents services and overall resource units used per patient.

The table below represents the state-wide averages for all physicians in your specialty: Family Practice

	TOTAL		Performed by you		By Other Providers	
	Services per patient	RU per patient	Services per patient	RU per patient	Services per patient	RU per patient
TOTAL	2.61	149.89	0.24	7.03	2.37	142.86
X-Ray	2.19	81.41	0.24	6.89	1.95	74.52
Ultrasound	0.19	16.71	0.00	0.13	0.19	16.58
CT	0.17	37.62	0.00	0.00	0.17	37.62
MRI	0.03	12.51	0.00	0.00	0.03	12.51
Other Imaging[3]	0.02	1.64	0.00	0.01	0.02	1.63

ANCILLARY SERVICE USE BY PRIMARY PATIENTS: X-RAY/IMAGING

PROVIDER ID:

Table 12. Distribution of X-Ray/Imaging Services for Your Primary Patients

	TOTAL		Performed by you		By Other Providers	
	Services per patient	RU per patient	Services per patient	RU per patient	Services per patient	RU per patient
TOTAL	3.98	191.99	0.00	0.00	3.98	191.99
X-Ray	3.31	116.44	0.00	0.00	3.31	116.44
Ultrasound	0.26	21.16	0.00	0.00	0.26	21.16
CT	0.15	37.63	0.00	0.00	0.15	37.63
MRI	0.02	7.33	0.00	0.00	0.02	7.33
Other Imaging[3]	0.24	9.43	0.00	0.00	0.24	9.43

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[3] Other Imaging services are defined as those procedures listed in the CPT-4 ranges of 70010-76999 other than those explicitly described above.

ANCILLARY SERVICE USE BY PRIMARY PATIENTS: OTHER DIAGNOSTIC SERVICES

Table 13 on the facing page shows the distribution of diagnostic services provided to your primary patients by both you and other providers. The table presents services and overall resource units used per patient.

The table below represents the state-wide averages for all physicians in your specialty: Family Practice

	TOTAL		Performed by you		By Other Providers	
	Services per patient	RU per patient	Services per patient	RU per patient	Services per patient	RU per patient
TOTAL	1.88	72.87	0.30	8.75	1.58	64.12
ECG	0.56	14.11	0.20	4.63	0.37	9.48
Sigmoidoscopy	0.06	5.04	0.02	1.38	0.04	3.66
Undifferentiated Upper GI Visualizatior	0.06	9.75	0.00	0.11	0.06	9.65
Other Testing[4]	1.20	43.97	0.08	2.64	1.11	41.33

ANCILLARY SERVICE USE BY PRIMARY PATIENTS: OTHER DIAGNOSTIC SERVICES

PROVIDER ID:

Table 13. Distribution of Other Diagnostic Services for Your Primary Patients

	TOTAL		Performed by you		By Other Providers	
	Services per patient	RU per patient	Services per patient	RU per patient	Services per patient	RU per patient
TOTAL	5.14	143.31	1.74	31.12	3.40	112.19
ECG	0.51	14.66	0.23	6.09	0.27	8.57
Sigmoidoscopy	0.09	7.09	0.00	0.31	0.08	6.78
Undifferentiated Upper GI Visualization	0.07	16.25	0.00	0.00	0.07	16.25
Other Testing[4]	4.48	105.32	1.50	24.73	2.98	80.59

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[4] Other Testing services are defined as those procedures listed in the CPT-4 ranges of 93000-93499 and 93850-95999 other than those explicitly described above.

OVERALL SUMMARY OF PATIENT UTILIZATION

Table 14 on the facing page gives an overall summary of the resource use measures presented in preceding tables. An actual to expected ratio (described in detail below) offers a method for you to make a case-mix adjusted comparison of your primary patient's resource use with that of all other physicians in your specialty caring for Medicare patients in your state.

ACTUAL TO EXPECTED RATIOS

Based on the Ambulatory Care Group (ACG) specialty-specific case-mix of your patients, the expected annual resource use (RU) per patient was calculated for each service category. The expected RU is based on the statewide averages for all patients in similar case-mix categories. As a means of providing a benchmark for your patient's health care consumption, actual to expected ratios (or A/Es) are used. If an actual/expected ratio is greater than 1, then more RUs were actually provided to your primary patients than expected. A ratio with a value of less than 1.0 indicates your patients consumed fewer RUs than expected.

For more information on the Johns Hopkins ACG case-mix system please refer to the more detailed description on the facing page of table 6.

The table below represents the state-wide averages for all physicians in your specialty: Family Practice

Type of service	Actual Resources per patient	Expected Resources per patient	Actual/Expected ratio
AMBULATORY			
Visits (table 4)	6.25	6.25	1.00
RUs	1571.82	1571.82	1.00
HOSPITAL			
Part A RUs (table 10)	2380.74	2380.74	1.00
Part B RUs (table 10)	165.88	165.88	1.00
ANCILLARY			
Laboratory RUs (table 11)	81.16	81.15	1.00
X-Ray/Imaging RUs (table 12)	149.86	149.86	1.00
Diagnostic Testing RUs (table 13)	72.37	72.37	1.00
Unspecified RUs	626.26	626.25	1.00
Total Hospital RUs	2546.62	2546.62	1.00
Total Non-hospital RUs	1701.41	1701.40	1.00
OVERALL TOTAL	4248.03	4248.02	1.00

OVERALL SUMMARY OF PATIENT UTILIZATION

PROVIDER ID:

Table 14. Actual to Expected Resource Comparisons for Your Primary Patients

Type of service	Actual Resources per patient	Expected Resources per patient	Actual/Expected ratio
AMBULATORY			
Visits (table 4)	6.19	7.13	0.87
RUs	1660.20	1823.84	0.91
HOSPITAL			
Part A RUs (table 10)	2724.30	2860.93	0.95
Part B RUs (table 10)	201.13	213.73	0.94
ANCILLARY			
Laboratory RUs (table 11)	107.64	92.91	1.16
X-Ray/Imaging RUs (table 12)	191.99	182.83	1.05
Diagnostic Testing RUs (table 13)	142.98	86.80	1.65
Unspecified RUs	685.61	839.64	0.82
Total Hospital RUs	2925.42	3074.65	0.95
Total Non-hospital RUs	1873.49	1967.60	0.95
OVERALL TOTAL	4798.91	5042.25	0.95

* Indicates two or more standard deviations above or below the statewide mean of 1.00.

DEMPAQ CLAIMS REVIEW SYSTEM

DIABETES PROFILE
STATE OF MARYLAND

July 1, 1990 - June 30, 1991

[PHYSICIAN NAME: Not A Maryland Provider]
[PHYSICIAN ID: 11 TOTAL]

DIABETES PROFILE – INTRODUCTION

This profile presents data for patients with diabetes, defined by a single claim for a physician visit with the diagnosis code of 250.xx.

Significance

Diabetes mellitus, the most common endocrine disease, is a chronic disease that requires continuing medical care and education to prevent acute complications and reduce the risk of long-term complications. The prevalence of non-insulin-dependent diabetes mellitus increases with age.

Abbreviations

ABFP = American Board of Family Practice
ADA = American Diabetes Association
DM = Diabetes mellitus
HDL = High-density lipoprotein
LDL = Low-density lipoprotein
Type I diabetes = insulin-dependent DM
Type II diabetes = non-insulin-dependent DM

References

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DIABETES

Table 1: Process Measures: Distribution of Services

Table 1, on the facing page, shows the percent of patients receiving 0, 1-2, 3-5, and over 5 services during the year. The last column shows the 95% confidence interval around the percent of patients with 0 services.

Recommended Care	Data Source	Notes
Primary care office (home visit)	CPT: 90000-90080 (90100-90170) 90600-90699 90750,90760	According to the ABFP, visits for diabetic patients in control should be scheduled every 3-6 months (ABFP, p. 36).
Hemoglobin A1C test	CPT: 83036	Since the hemoglobin A1C test gives a good indication of the level of glucose control, it is recommended every 2 to 3 months (ABFP, p. 37) or every 6 months (ADA, p. 367).
Urinalysis	CPT: 81000,81002 81005,81099 84180,84185 84190	Annual urinalysis is recommended to check for proteinuria (ABFP, p. 38; ADA, p. 367). Proteinuria is an early manifestation of diabetic nephropathy (Branch, p. 785). Note: If urinalysis is done in the physician's office, it may not be billed separately.
Triglycerides	CPT: 84478 80061-80062 80065 83705 83720	Triglycerides should be tested annually (ADA, p. 367). Hypertriglyceridemia is common in diabetics (Harrison's, p. 1756).
Total cholesterol	CPT: 82465,82470 83700-83720 80012-80019 80065 80050 80053 80060-80062	Total cholesterol should be tested annually (ADA, p. 367) because diabetics are prone to have arteriosclerosis and have an increased risk of myocardial infarction (Harrison's, p. 1733).
HDL cholesterol	CPT: 83718 80061-80062 80065	HDL cholesterol should be tested annually (ADA, p. 367). In diabetics the ratio of HDL to LDL is altered and the risk of arteriosclerotic disease is increased (Harrison's, p. 1753).
Ophthalmology visit	CPT: 92002-92019 92225-92260	A complete eye and visual examination should be performed annually (ADA, p. 367). This examination is important to detect early signs of retinopathy (Harrison's, p. 1753) or cataract (Branch, p. 784).
	90000-90080 90600-90699 90750,90760	These codes are acceptable if reported by an ophthalmologist. Optometry visits in an optical shop are probably not billed to Medicare.

Limited Use Care	Data Source	Notes
Blood glucose	CPT: 82947-82952 80006-80019	While many physicians use blood glucose to monitor patients with diabetes, guidelines from ABFP (p. 37) and ADA recommend hemoglobin A1C for diabetes monitoring. In some cases, blood glucose tests may be a valuable adjunct to the hemoglobin A1C test. The blood glucose test is listed in the limited use category because it is sometimes appropriate for patients taking insulin. However, Medicare data do not indicate which drugs are used by a patient and may not indicate whether diabetes is type I or type II. Home blood glucose monitoring is not captured by these data.

DIABETES

PROVIDER ID: 11 TOTAL

PROVIDER ID	Specialty Total
SPECIALTY	Internal Medicine
Total number of primary patients with diabetes: 18685	

Table 1. Process Measures: Distribution of Services

	% of Pts. Receiving This # Services During Year				Conf Int % with 0*
RECOMMENDED CARE	0	1-2	3-5	>5	
General medical visits (first 6 months)	6.9	42.9	35.7	14.5	6.6- 7.3
General medical visits (last 6 months)	9.0	39.9	35.8	15.3	8.6- 9.4
Hemoglobin A1C tests	75.6	16.8	6.7	0.9	75.0-76.2
Urinalysis	53.0	31.1	11.4	4.5	52.2-53.7
Triglycerides	59.2	29.8	8.5	2.4	58.5-59.9
Total cholesterol	37.1	29.4	19.3	14.2	36.4-37.8
HDL cholesterol	68.6	24.3	6.0	1.0	68.0-69.3
Ophthalmology visits	50.0	32.3	12.8	4.8	49.3-50.8
LIMITED USE CARE					
Blood Glucose	18.3	28.8	31.7	21.2	17.7-18.9

*These numbers reflect the 95% confidence interval around the percent of patients who had no services. The upp and lower limits are likely to contain the true percent, and the limits will be narrower if the data sample contains many patients. Percents from specialty groups will not necessarily fall into the confidence intervals. However, the confidence interval around the specialty group percent should overlap the statewide interval.

DIABETES

Table 2: Hospital Admissions for Treatment of Selected Complications

Table 2, on the facing page, shows the number of patients admitted for selected complications, number of admissions (equal to or greater than number of patients), percent admitted, percent discharged who did not have a follow-up visit, and average days from discharge to the first follow-up visit or readmission. Because the complications have potential important impact, follow-up should be fairly prompt. High admission rates may reflect patients with more severe disease or may reflect inadequate ambulatory management.

The last column shows the 95% confidence level for the percent of patients admitted. When comparing two groups of physicians, if the confidence limits do not overlap, then the two groups are different.

Selected Complications	Data Source	Notes
Ketoacidosis	ICD9: 250.1	Ketoacidosis is an acute metabolic complication of diabetes (Harrison's, p. 1749).
Hyperosmolar coma	ICD9: 250.2	Hyperosmolar nonketotic hyperglycemia can cause coma in the diabetic (Harrison's, p. 2051-2).
Other coma	ICD9: 250.3	Hyperglycemia with ketoacidosis is one of several conditions that can cause coma in diabetic patients (Harrison's, p. 2051-2).
Hypoglycemic coma	ICD9: 251.0	Hypoglycemia is a common complication of diabetes and may lead to coma (ABFP, p. 25; Harrison's, p. 1747).
Lower-extremity amputation	CPT: 27590-27598 27880-27889 28800-28825	Since diabetics are prone to arteriosclerotic vascular disease and foot ulcers (Harrison's, p. 1753), failure to inspect the feet or to teach patients proper foot care may contribute to the need for lower-extremity amputation.

DIABETES

PROVIDER ID: 11 TOTAL

Table 2. Hospital Admission for Treatment of Selected Complications

Condition	Patients Admitted[1]	Number of Admissions	Percent Admitted	% dischrgs no visit[2]	Avg days until visit[3]	Conf Int % admitd[4]
Ketoacidosis	38	42	0.20	2.63	24.78	0.14- 0.27
Hyperosmolar coma	19	19	0.10	11.11	18.00	0.06- 0.15
Other coma	5	5	0.03	25.00	7.00	0.00- 0.05
Hypoglycemic coma	16	16	0.09	0.00	5.75	0.04- 0.13
Lower extremity amputation	154	187	0.82	21.58	52.69	0.69- 0.95

[1] If patients have more than one hospitalized complication, they are included in each category.

[2] Some patients were discharged to home (i.e., did not die in the hospital or enter a skilled nursing facility) but had no follow-up ambulatory visits. There are many possible explanations:

- Patient was discharged near the end of the study period so no follow-up dates
- Patient died shortly after discharge
- No follow-up visit occurred
- Patient was re-admitted

[3] For only those patients who had a follow-up visit, the average number of days after discharge until the visit is presented.

[4] These numbers reflect the 95% confidence interval for the percent of patients admitted.

DIABETES

Table 3: Encounter Utilization Measures

The left two columns of data on Table 3 on the facing page show the number and percent of services provided by the assigned primary physician, other general medicine physicians, specialists, and emergency rooms (see below).

The right two columns of Table 3 show the number and percent of patients. These percents do not sum to 100% because many patients see physicians in more than one category.

Specialists and Emergency Room Use	Data Source	Notes
Assigned primary physician	Self-assigned specialty	The general medicine physician who provided more visits than any other general medicine physician.
Other general medicine physicians	Self-assigned specialty	Internal medicine, family practice, and general practice physicians.
Ophthalmologist or optometrist	Self-assigned specialty	Patients with diabetes need regular eye examinations with dilated pupils.
Podiatrist	Self-assigned specialty	Since foot problems are common in diabetics, these patients may require podiatric services.
Cardiologist	Self-assigned specialty	Since arteriosclerotic heart disease is a complication of diabetes, cardiologists are an important source of nonprimary care for these patients.
Other specialists	Self-assigned specialty	Patients with diabetes may require a specialist's care for conditions related or unrelated to diabetes.
Emergency room	CPT: 90500-90580	Patients with diabetes may seek emergency room treatment for sudden worsening of their condition. Use of the emergency room may indicate failure of control in the ambulatory care setting or failure of patient compliance with therapy.

PROVIDER ID: 11 TOTAL

Table 3. Encounter Utilization Measures

Service	Number of Services	Percent of Services	Number of Patients	Percent of Patients
Visits to:				
Assigned primary physician	102584	56.73	18601	99.55[5]
Other general medicine physicians	11983	6.63	4868	26.05
Ophthalmologists	9628	5.32	5271	28.21
Podiatrists	5178	2.86	2454	13.13
Cardiologists	3210	1.78	1248	6.68
Other specialists	38066	21.05	10238	54.79
Emergency rooms	10169	5.62	5585	29.89

[5] This number does not equal 100% of patients assigned to a primary physician, because some primary patients were seen in the emergency room only.

DEMPAQ CLAIMS REVIEW SYSTEM

HYPERTENSION PROFILE
STATE OF MARYLAND

July 1, 1990 - June 30, 1991

[PHYSICIAN NAME: Not A Maryland Provider]
[PHYSICIAN ID: 11 TOTAL]

HYPERTENSION PROFILE – INTRODUCTION

This profile presents data for patients with hypertension, defined by a single claim for a physician visit with the diagnosis code of 401.00, 401.1, or 401.9 and without congestive heart failure.

Significance

Hypertension is a major cause of morbidity and mortality in the U.S. Adequate control of blood pressure can prevent many of the serious sequelae of hypertension.

Abbreviations

ABFP = American Board of Family Practice
ACE = Angiotensin-converting enzyme
AMI = Acute myocardial infarction
CHF = Congestive heart failure
CVA = Cerebrovascular accident
DM = Diabetes mellitus
IHD = Ischemic heart disease
TIA = Transient cerebral ischemic attack

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HYPERTENSION

Table 1: Process Measures: Distribution of Services

Table 1, on the facing page, shows the percent of patients receiving 0, 1-2, 3-5, and over 5 services during the year. The last column shows the 95% confidence interval around the percent of patients with 0 services.

Recommended Care	Data Source	Notes
Primary care office (home visit)	CPT: 90000-90080 (90100-90170) 90600-90699 90750,90760	The primary care visit for patients with hypertension is important for monitoring drug doses and side effects. For this profile, 2 visits per year are considered minimal care.

Limited Use Care	Data Source	Notes
Creatinine	CPT: 80012-80019 80060,80065 80073,82546 82565	A serum creatinine test should be part of the initial evaluation for a patient with hypertension (ABFP, p. 11). Increased serum creatinine levels indicate renal dysfunction, which may be a sequela of hypertension or its therapy (Harrison's, p. 1006, 1010-11, 1014).
Triglycerides	CPT: 80061-80062 80065,83705 83720,84478	Measurement of serum triglycerides is useful at initial evaluation (and later for some patients) because it aids assessment of other cardiovascular risk factors and gives guidance for therapy (ABFP, p. 11; Goroll, p. 100, 482).
Total cholesterol	CPT: 80012-80019 80050,80053 80060-80062 80065,82465, 82470 83700-83720	Discretionary monitoring of total cholesterol provides information on an additional risk factor and guidance for therapy (ABFP, p. 11).
Serum potassium	CPT: 80002-80019 80060,80062 80065,84132	Close monitoring of serum potassium is necessary for patients who are receiving diuretics or ACE inhibitors (Harrison's, p. 1010; DE, p. 488). A low serum potassium level may indicate primary aldosteronism (ABFP, p. 11).

HYPERTENSION

PROVIDER ID: 11 TOTAL

PROVIDER ID	Specialty Total
SPECIALTY	Internal Medicine
Total number of primary patients with hypertension: 44879	

Table 1. Process Measures: Distribution of Services

	% of Pts. Receiving This # Services During Year				Conf Int % with 0*
RECOMMENDED CARE	0	1-2	3-5	>5	
General medical visits (first 6 months)	9.5	52.3	30.1	8.1	9.2- 9.7
General medical visits (last 6 months)	9.8	50.0	31.3	9.0	9.5-10.0
LIMITED USE CARE					
Creatinine	45.7	44.4	8.4	1.5	45.3-46.2
Triglycerides	62.5	29.9	6.2	1.4	62.1-63.0
Total cholesterol	40.4	32.8	18.4	8.4	39.9-40.8
Serum potassium	39.6	44.9	12.6	3.0	39.1-40.0

*These numbers reflect the 95% confidence interval around the percent of patients who had no services. The upper and lower limits are likely to contain the true percent, and the limits will be narrower if the data sample contains many patients. Percents from specialty groups will not necessarily fall into the confidence intervals. However, the confidence interval around the specialty group percent should overlap the statewide interval.

HYPERTENSION AND AGE 65-79

Table 1a. Process Measures: Distribution of Services -- Age

Table 1a, on the facing page, shows the same information as Table 1 for patients age 65-79. Again, the confidence limits give upper and lower limits for where the true percent lies. If you compare Tables 1a and 1b, and the confidence intervals for percent of patients with zero services do not overlap, then the patients age 65-79 and age 80+ are significantly different.

HYPERTENSION AND AGE 65-79

PROVIDER ID	Specialty Total
SPECIALTY	Internal Medicine

Total number of primary patients with hypertension and age 65-79: 38359

able 1A. Process Measures: Distribution of Services

	% of Pts. Receiving This # Services During Year				Conf Int % with 0*
RECOMMENDED CARE	0	1-2	3-5	>5	
General medical visits (first 6 months)	9.8	52.4	29.8	8.0	9.5-10.1
General medical visits (last 6 months)	9.8	50.2	31.0	9.0	9.5-10.1
LIMITED USE CARE					
Creatinine	45.6	44.4	8.5	1.5	45.1-46.1
Triglycerides	61.6	30.4	6.5	1.5	61.1-62.1
Total cholesterol	39.8	32.8	18.6	8.8	39.3-40.3
Serum potassium	39.4	44.9	12.7	3.0	39.0-39.9

*These numbers reflect the 95% confidence interval around the percent of patients who had no services. The upper and lower limits are likely to contain the true percent, and the limits will be narrower if the data sample contains many patients. Percents from specialty groups will not necessarily fall into the confidence intervals. However, the confidence interval around the specialty group percent should overlap the statewide interval.

Table 1b. Process Measures: Distribution of Services – Age

Table 1b, on the facing page, shows the same information as Table 1 for patients age 80+. Again, the confidence limits give upper and lower limits for where the true percent lies. If you compare Tables 1a and 1b, and the confidence intervals for percent of patients with zero services do not overlap, then the patients age 65-79 and age 80+ are significantly different.

HYPERTENSION AND AGE 80+

PROVIDER ID	Specialty Total
SPECIALTY	Internal Medicine

Total number of primary patients with hypertension and age 80+: 6520

ble 1B. Process Measures: Distribution of Services

	% of Pts. Receiving This # Services During Year				Conf Int % with 0*
RECOMMENDED CARE	0	1-2	3-5	>5	
General medical visits (first 6 months)	7.5	52.0	32.1	8.5	6.8- 8.1
General medical visits (last 6 months)	9.7	48.5	32.9	9.0	9.0-10.4
LIMITED USE CARE					
Creatinine	46.4	44.8	7.5	1.3	45.2-47.6
Triglycerides	67.9	27.1	4.2	0.8	66.8-69.0
Total cholesterol	43.8	32.8	17.2	6.2	42.6-45.0
Serum potassium	40.4	44.9	11.9	2.8	39.2-41.6

*These numbers reflect the 95% confidence interval around the percent of patients who had no services. The upper and lower limits are likely to contain the true percent, and the limits will be narrower if the data sample contains many patients. Percents from specialty groups will not necessarily fall into the confidence intervals. However, the confidence interval around the specialty group percent should overlap the statewide interval.

Table 1c. Process Measures: Distribution of Services -- Two Conditions

Table 1c, on the facing page, shows the same information as Table 1 for patients with hypertension and ischemic heart disease. If you compare Tables 1 and 1c, and the confidence intervals for percent of patients with zero services do not overlap, then the patients who have two conditions are significantly different from patients with a single condition.

Please note that there are more services listed on Table 1c than on Table 1 because these measures relate to both conditions.

HYPERTENSION AND IHD

PROVIDER ID	Specialty Total
SPECIALTY	Internal Medicine

Total number of primary patients with hypertension and IHD: 6314

Table 1C. Process Measures: Distribution of Services

	% of Pts. Receiving This # Services During Year				Conf Int % with 0*
RECOMMENDED CARE	0	1-2	3-5	>5	
General medical visits (first 6 months)	5.7	38.6	40.2	15.6	5.1- 6.3
General medical visits (last 6 months)	6.2	37.6	38.6	17.6	5.6- 6.8
LIMITED USE CARE					
Creatinine	40.2	44.3	12.8	2.7	39.0-41.4
Triglycerides	55.1	33.0	9.5	2.4	53.8-56.3
Total cholesterol	34.1	30.4	21.3	14.2	32.9-35.2
Serum potassium	33.3	44.0	17.5	5.2	32.1-34.5
Coronary catheterization	99.4	0.6	0.0	0.0	99.2-99.6
ECG without exercise	22.3	53.9	20.1	3.7	21.2-23.3
Exercise stress test	81.4	17.7	0.7	0.2	80.4-82.3
Echocardiography	90.3	7.7	2.0	0.0	89.5-91.0
Radionuclide study without exercise	98.2	1.6	0.1	0.0	97.8-98.5
Radionuclide study with exercise	91.2	8.6	0.2	0.0	90.5-91.9

[*] These numbers reflect the 95% confidence interval around the percent of patients who had no services. The upper and lower limits are likely to contain the true percent, and the limits will be narrower if the data sample contains many patients. Percents from specialty groups will not necessarily fall into the confidence intervals. However, the confidence interval around the specialty group percent should overlap the statewide interval.

HYPERTENSION

Table 2: Hospital Admissions for Treatment of Selected Complications

Table 2, on the facing page, shows the number of patients admitted for selected complications, number of admissions (equal to or greater than number of patients), percent admitted, percent discharged who did not have a follow-up visit, and average days from discharge to the first follow-up visit or readmission. Because the complications have potential important impact, follow-up should be fairly prompt. High admission rates may reflect patients with more severe disease or may reflect inadequate ambulatory management.

The last column shows the 95% confidence level for the percent of patients admitted. When comparing two groups of physicians, if the confidence limits do not overlap, then the two groups are different.

Selected Complications	Data Source	Notes
Cerebrovascular accident	ICD9: 434,434.x, 436,437,437.0, 437.1,437.9	Patients with hypertension have an increased risk of stroke, which may be due to ischemia or intracerebral hemorrhage (Harrison's, p. 1978).
Transient cerebral ischemic attack	ICD9: 435-435.9	The cerebrovascular conditions that often accompany hypertension may lead to either TIA or CVA (Harrison's, p. 1977-8).
Acute myocardial infarction	ICD9: 410.xx-414.xx	Hypertension is a risk factor for both IHD and AMI (Merck, p. 337).
Hyperkalemia	ICD9: 276.7	Beta-blockers and ACE inhibitors (drugs often taken by patients with hypertension) increase the risk of hyperkalemia, particularly for patients with impaired renal function (Harrison's, p. 288; DE, p. 488).
Hypokalemia	ICD9: 276.8	The risk of hypokalemia is especially high for elderly patients being treated with both digitalis and a thiazide diuretic (ABFP, p. 24).
Congestive heart failure	ICD9: 402.01,402.11 402.91,428.xx	Hypertension predisposes the affected patient to CHF (Merck, p. 337).

HYPERTENSION

PROVIDER ID: 11 TOTAL

Table 2. Hospital Admission for Treatment of Selected Complications

Condition	Patients Admitted[1]	Number of Admissions	Percent Admitted	% dischrgs no visit[2]	Avg days until visit[3]	Conf Int % admitd[4]
Cerebrovascular Accident	538	590	1.20	9.61	28.89	1.10- 1.30
Trans. Cerebral Ischemic Attack	226	233	0.50	13.57	22.27	0.44- 0.57
Acute Myocardial Infarction	1133	1527	2.52	13.33	25.51	2.38- 2.67
Hyperkalemia	11	13	0.02	15.38	10.18	0.01- 0.04
Hypokalemia	14	15	0.03	7.14	29.92	0.01- 0.04
Congestive Heart Failure	101	112	0.23	16.33	23.85	0.18- 0.27

[1] If patients have more than one hospitalized complication, they are included in each category.

[2] Some patients were discharged to home (i.e., did not die in the hospital or enter a skilled nursing facility) but had no follow-up ambulatory visits. There are many possible explanations:

- Patient was discharged near the end of the study period so no follow-up dates
- Patient died shortly after discharge
- No follow-up visit occurred
- Patient was re-admitted

[3] For only those patients who had a follow-up visit, the average number of days after discharge until the visit is presented.

[4] These numbers reflect the 95% confidence interval for the percent of patients admitted.

Table 3: Encounter Utilization Measures

The left two columns of data on Table 3 on the facing page show the number and percent of services provided by the assigned primary physician, other general medicine physicians, specialists, and emergency rooms (see below).

The right two columns of Table 3 show the number and percent of patients. These percents do not sum to 100% because many patients see physicians in more than one category.

Specialists and Emergency Room Use	Data Source	Notes
Assigned primary physicians	Self-assigned specialty	The general medicine physician who provided more visits than any other general medicine physician.
Other general medicine physicians	Self-assigned specialty	Internal medicine, family practice, and general practice physicians.
Cardiologist	Self-assigned specialty	Since heart disease is a common sequela of hypertension, cardiologists are an important source of nonprimary care for patients with hypertension.
Other specialists	Self-assigned specialty	Patterns of care-seeking by patients with hypertension may include use of specialists other than cardiologists.
Emergency Room	CPT: 90500-90580	Patients with hypertension may seek emergency room treatment for acute complications of hypertension.

HYPERTENSION

PROVIDER ID: 11 TOTAL

Table 3. Encounter Utilization Measures

Service	Number of Services	Percent of Services	Number of Patients	Percent of Patients
Visits to:				
Assigned primary physician	201232	56.72	44775	99.77[5]
Other general medicine physicians	22736	6.41	10381	23.13
Cardiologists	4557	1.28	1968	4.39
Other specialists	111988	31.56	29852	66.52
Emergency rooms	14285	4.03	8984	20.02

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[5] This number does not equal 100% of patients assigned to a primary physician, because some primary patients were seen in the emergency room only.

DEMPAQ CLAIMS REVIEW SYSTEM

ISCHEMIC HEART DISEASE PROFILE
STATE OF MARYLAND

July 1, 1990 - June 30, 1991

[PHYSICIAN NAME: Not A Maryland Provider]
[PHYSICIAN ID: 11 TOTAL]

ISCHEMIC HEART DISEASE PROFILE – INTRODUCTION

This profile presents data for patients with ischemic heart disease, defined by a single claim with the diagnosis code of 410.xx-414.xx.

Significance

IHD has an overall prevalence among the U.S. elderly of about 14% and in 1988 accounted for nearly 2.4 million hospitalizations for persons over age 65 (NCHS, 1991). While medical and surgical treatments help some patients, the best therapy is risk-factor reduction and treatment of aggravating conditions (Goroll, p. 128).

Abbreviations

ABFP = American Board of Family Practice
ACP = American College of Physicians
AMI = Acute myocardial infarction
CABG = Coronary artery bypass graft
CAD = Coronary artery disease
CHF = Congestive heart failure
ECG = Electrocardiogram
HDL = High density lipoprotein cholesterol
IHD = Ischemic heart disease
NCHS = National Center for Health Statistics
PTCA = Percutaneous transluminal coronary angioplasty

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ISCHEMIC HEART DISEASE

Table 1: Process Measures: Distribution of Services

Table 1, on the facing page, shows the percent of patients receiving 0, 1-2, 3-5, and over 5 services during the year. The last column shows the 95% confidence interval around the percent of patients with 0 services.

Recommended Care	Data Source	Notes
Primary care office (home) visit or visit with specialist, once in each half year.	CPT: 90000-90170 (90100-90170) 90600-90699 90750,90760	The regular follow-up of patients with ischemic heart disease is important to monitor for management of angina, infarction, cardiac failure, or arrhythmias. The ABFP recommends follow-up at 3- to 6-month intervals for patients with ischemic heart disease (ABFP, p. 37).

Limited Use Care	Data Source	Notes
Total cholesterol	CPT: 80012-80019 80050,80053 80060-80062 80065,82465 82470 83700-83720	Elevated serum cholesterol is a known risk factor for AMI (Goroll et al., p. 42). The ACP (Hayward et al., p. 769) and the ABFP (ABFP, p. 37) recommend frequent or appropriately timed cholesterol tests for patients with IHD.
HDL cholesterol	CPT: 80061-80062 80065,83718	Since risk of CAD is inversely correlated with HDL cholesterol level, periodic monitoring of HDL cholesterol is warranted for assessment of risk (Goroll, p. 97).
Coronary catheterization	CPT: 93547-93553	The extent of coronary disease, as revealed by coronary angiography is an important predictor of the risk of death from CAD. Coronary angiography is indicated for selected patients, including those with incapacitating angina who are already on a maximum medical program. (Scientific American, p. 8; ABFP, p. 12).
ECG without exercise	CPT: 93000-93014	The resting ECG is a standard tool in diagnosing ischemic heart disease (ABFP, p. 10). ST depression indicates ischemia.
Exercise stress test	CPT: 93015,93017 93018	In the absence of an ST-segment depression on a resting ECG, an exercise stress test can help in diagnosing ischemic heart disease in patients with chest pain (ABFP, p. 10) or silent ischemia.
Echocardiography	CPT: 93307-93350	A resting echocardiogram can identify myocardial involvement, provide a good measure of ventricular size and function, and help rule out other types of cardiac disease such as cardiomyopathy or valvular disease (ABFP, p. 12).
Radionuclide study without exercise	CPT: 78414-78445 78460,78464 78466-78474 78481,78484	A resting radionuclide study can be useful in distinguishing the etiology of cardiac disease (e.g., a poorly functioning left ventricle versus coronary disease). Multigated studies provide data about the size, contraction pattern, and ejection fraction of a resting heart (Scientific American, p. 6). Nuclear medicine studies tend to be more expensive than other studies, however, and physicians may wish to limit their use (ABFP, p. 12).
Radionuclide study with exercise	CPT: 78461,78465 78475-78479 78485,78486 78487,78489	A radionuclide study with exercise can demonstrate areas of ischemia by showing defects that reperfuse after rest. Information about wall motion abnormalities and ejection fraction contribute to the diagnosis of ischemia (Harrison's, p. 966). The caveat about the use of radionuclide studies also applies here.

ISCHEMIC HEART DISEASE

PROVIDER ID: 11 TOTAL

PROVIDER ID	Specialty Total
SPECIALTY	Internal Medicine

Total number of primary patients with ischemic heart disease: 26554

Table 1. Process Measures: Distribution of Services

	% of Pts. Receiving This # Services During Year				Conf Int % with 0*
RECOMMENDED CARE	0	1-2	3-5	>5	
General medical visits (first 6 months)	8.3	43.1	34.6	14.0	8.0- 8.7
General medical visits (last 6 months)	10.1	41.0	34.1	14.9	9.7-10.4
LIMITED USE CARE					
Total cholesterol	38.9	29.0	19.3	12.8	38.3-39.5
HDL cholesterol	68.4	25.2	5.6	0.8	67.9-69.0
Coronary catheterization	99.5	0.5	0.0	0.0	99.4-99.6
ECG without exercise	23.8	51.1	20.6	4.5	23.3-24.3
Exercise stress test	83.2	16.0	0.5	0.2	82.8-83.7
Echocardiography	89.9	7.9	2.0	0.2	89.5-90.3
Radionuclide study without exercise	98.0	1.8	0.1	0.0	97.9-98.2
Radionuclide study with exercise	92.5	7.3	0.2	0.0	92.2-92.8

*These numbers reflect the 95% confidence interval around the percent of patients who had no services. The upper and lower limits are likely to contain the true percent, and the limits will be narrower if the data sample contains many patients. Percents from specialty groups will not necessarily fall into the confidence intervals. However, the confidence interval around the specialty group percent should overlap the statewide interval.

ISCHEMIC HEART DISEASE AND AGE 65-79

Table 1a. Process Measures: Distribution of Services – Age

Table 1a, on the facing page, shows the same information as Table 1 for patients age 65-79. Again, the confidence limits give upper and lower limits for where the true percent lies. If you compare Tables 1a and 1b, and the confidence intervals for percent of patients with zero services do not overlap, then the patients age 65-79 and age 80+ are significantly different.

IHD AND AGE 65-79

PROVIDER ID	Specialty Total
SPECIALTY	Internal Medicine

Total number of primary patients with IHD and age 65-79: 21782

ble 1A. Process Measures: Distribution of Services

	% of Pts. Receiving This # Services During Year				Conf Int % with 0*
RECOMMENDED CARE	0	1-2	3-5	>5	
General medical visits (first 6 months)	8.6	43.5	34.1	13.8	8.3- 9.0
General medical visits (last 6 months)	9.9	41.5	33.8	14.8	9.5-10.3
LIMITED USE CARE					
Total cholesterol	38.6	28.8	19.5	13.2	37.9-39.2
HDL cholesterol	67.8	25.5	5.9	0.9	67.1-68.4
Coronary catheterization	99.4	0.6	0.0	0.0	99.3-99.5
ECG without exercise	23.6	51.3	20.8	4.4	23.0-24.1
Exercise stress test	80.7	18.4	0.6	0.2	80.2-81.2
Echocardiography	89.5	8.2	2.1	0.2	89.1-89.9
Radionuclide study without exercise	97.8	2.1	0.2	0.0	97.6-98.0
Radionuclide study with exercise	91.4	8.4	0.3	0.0	91.0-91.7

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*These numbers reflect the 95% confidence interval around the percent of patients who had no services. The upper and lower limits are likely to contain the true percent, and the limits will be narrower if the data sample contains many patients. Percents from specialty groups will not necessarily fall into the confidence intervals. However, the confidence interval around the specialty group percent should overlap the statewide interval.

Table 1b. Process Measures: Distribution of Services – Age

Table 1b, on the facing page, shows the same information as Table 1 for patients age 80+. Again, the confidence limits give upper and lower limits for where the true percent lies. If you compare Tables 1a and 1b, and the confidence intervals for percent of patients with zero services do not overlap, then the patients age 65-79 and age 80+ are significantly different.

IHD AND AGE 80+

ROVIDER ID	Specialty Total
SPECIALTY	Internal Medicine

otal number of primary patients with IHD and age 80+: 4772

ble 1B. Process Measures: Distribution of Services

	% of Pts. Receiving This # Services During Year				Conf Int % with 0*
RECOMMENDED CARE	0	1-2	3-5	>5	
General medical visits (first 6 months)	6.9	41.4	37.1	14.6	6.2- 7.7
General medical visits (last 6 months)	10.8	38.7	35.4	15.2	9.9-11.7
LIMITED USE CARE					
Total cholesterol	40.3	30.0	18.7	11.0	38.9-41.7
HDL cholesterol	71.4	23.8	4.2	0.6	70.1-72.7
Coronary catheterization	99.9	0.1	0.0	0.0	99.8- 100
ECG without exercise	25.1	50.3	19.8	4.8	23.9-26.3
Exercise stress test	94.8	5.0	0.2	0.0	94.1-95.4
Echocardiography	91.7	6.6	1.6	0.1	90.9-92.5
Radionuclide study without exercise	99.2	0.7	0.1	0.0	99.0-99.5
Radionuclide study with exercise	97.7	2.2	0.1	0.0	97.3-98.1

*These numbers reflect the 95% confidence interval around the percent of patients who had no services. The upper and lower limits are likely to contain the true percent, and the limits will be narrower if the data sample contains many patients. Percents from specialty groups will not necessarily fall into the confidence intervals. However, the confidence interval around the specialty group percent should overlap the statewide interval.

HYPERTENSION AND ISCHEMIC HEART DISEASE

Table 1c. Process Measures: Distribution of Services – Two Conditions

Table 1c, on the facing page, shows the same information as Table 1 for patients with hypertension and ischemic heart disease. If you compare Tables 1 and 1c, and the confidence intervals for percent of patients with zero services do not overlap, then the patients who have two conditions are significantly different from patients with a single condition.

Please note that there are more services listed on Table 1c than on Table 1 because these measures relate to both conditions.

HYPERTENSION AND IHD

PROVIDER ID	Specialty Total
SPECIALTY	Internal Medicine
Total number of primary patients with hypertension and IHD: 6314	

able 1C. Process Measures: Distribution of Services

	% of Pts. Receiving This # Services During Year				Conf Int % with 0*
RECOMMENDED CARE	0	1-2	3-5	>5	
General medical visits (first 6 months)	5.7	38.6	40.2	15.6	5.1- 6.3
General medical visits (last 6 months)	6.2	37.6	38.6	17.6	5.6- 6.8
LIMITED USE CARE					
Creatinine	40.2	44.3	12.8	2.7	39.0-41.4
Triglycerides	55.1	33.0	9.5	2.4	53.8-56.3
Total cholesterol	34.1	30.4	21.3	14.2	32.9-35.2
Serum potassium	33.3	44.0	17.5	5.2	32.1-34.5
Coronary catheterization	99.4	0.6	0.0	0.0	99.2-99.6
ECG without exercise	22.3	53.9	20.1	3.7	21.2-23.3
Exercise stress test	81.4	17.7	0.7	0.2	80.4-82.3
Echocardiography	90.3	7.7	2.0	0.0	89.5-91.0
Radionuclide study without exercise	98.2	1.6	0.1	0.0	97.8-98.5
Radionuclide study with exercise	91.2	8.6	0.2	0.0	90.5-91.9

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*These numbers reflect the 95% confidence interval around the percent of patients who had no services. The upper and lower limits are likely to contain the true percent, and the limits will be narrower if the data sample contains many patients. Percents from specialty groups will not necessarily fall into the confidence intervals. However, the confidence interval around the specialty group percent should overlap the statewide interval.

CONGESTIVE HEART FAILURE AND ISCHEMIC HEART DISEASE

Table 1d. Process Measures: Distribution of Services -- Two Conditions

Table 1d, on the facing page, shows the same information as Table 1 for patients with congestive heart failure and ischemic heart disease. If you compare Tables 1 and 1d, and the confidence intervals for percent of patients with zero services do not overlap, then the patients who have two conditions are significantly different from patients with a single condition.

Please note that there are more services listed on Table 1d than on Table 1 because these measures relate to both conditions.

CHF AND IHD

PROVIDER ID	Specialty Total
SPECIALTY	Internal Medicine
Total number of primary patients with CHF and IHD: 4391	

able 1D. Process Measures: Distribution of Services

	% of Pts. Receiving This # Services During Year				Conf Int % with 0*
RECOMMENDED CARE	0	1-2	3-5	>5	
General medical visits (first 6 months)	5.9	27.6	39.0	27.5	5.2- 6.6
General medical visits (last 6 months)	9.7	24.8	36.9	28.6	8.8-10.5
Serum potassium	29.2	32.3	24.2	14.3	27.9-30.5
LIMITED USE CARE					
Echocardiography	82.9	12.9	3.8	0.5	81.7-84.0
ECG	16.9	42.9	29.1	11.2	15.8-18.0
Chest x-ray	33.3	47.3	15.9	3.5	31.9-34.7
Contrast angiography	99.6	0.4	0.0	0.0	99.4-99.8
Excercise stress test	90.1	7.8	1.5	0.6	89.2-91.0
Total cholesterol	38.2	24.1	19.1	18.6	36.8-39.6
HDL cholesterol	70.0	22.3	6.6	1.2	68.6-71.3
Coronary catheterization	99.6	0.4	0.0	0.0	99.4-99.8
Exercise stress test	90.1	7.8	1.5	0.6	89.2-91.0
Radionuclide study without exercise	97.3	2.4	0.3	0.0	96.8-97.7
Radionuclide study with exercise	94.9	5.0	0.2	0.0	94.2-95.5

*These numbers reflect the 95% confidence interval around the percent of patients who had no services. The upper and lower limits are likely to contain the true percent, and the limits will be narrower if the data sample contains many patients. Percents from specialty groups will not necessarily fall into the confidence intervals. However, the confidence interval around the specialty group percent should overlap the statewide interval.

Table 2: Hospital Admissions for Treatment of Selected Complications

Table 2, on the facing page, shows the number of patients admitted for selected complications, number of admissions (equal to or greater than number of patients), percent admitted, percent discharged who did not have a follow-up visit, and average days from discharge to the first follow-up visit or readmission. Because the complications have potential important impact, follow-up should be fairly prompt. High admission rates may reflect patients with more severe disease or may reflect inadequate ambulatory management.

The last column shows the 95% confidence level for the percent of patients admitted. When comparing two groups of physicians, if the confidence limits do not overlap, then the two groups are different.

Selected Complications	Data Source	Notes
Acute myocardial infarction	ICD9: 410.00–410.91	A myocardial infarction can result from ischemic heart disease.
Ventricular arrhythmia	ICD9: 427.1,427.41 427.42	Ventricular tachycardia and ventricular fibrillation may occur in patients with a myocardial infarction (Harrison's, p. 958).
Congestive heart failure	ICD9: 402.01,402.11 402.91 428.0–428.9 429.9	Left heart failure can result from a myocardial infarction (Harrison's, p. 960).

ISCHEMIC HEART DISEASE

PROVIDER ID: 11 TOTAL

able 2. Hospital Admission for Treatment of Selected Complications

Condition	Patients Admitted[1]	Number of Admissions	Percent Admitted	% dischrgs no visit[2]	Avg days until visit[3]	Conf Int % admitd[4]
Acute Myocardial Infarction	1200	1309	4.52	10.75	23.82	4.27- 4.77
Ventricular arrhythmia	96	114	0.36	10.75	24.71	0.29- 0.43
Congestive Heart Failure	1483	2049	5.58	13.64	20.63	5.31- 5.86

[1] If patients have more than one hospitalized complication, they are included in each category.

[2] Some patients were discharged to home (i.e., did not die in the hospital or enter a skilled nursing facility) but had no follow-up ambulatory visits. There are many possible explanations:

- Patient was discharged near the end of the study period so no follow-up dates
- Patient died shortly after discharge
- No follow-up visit occurred
- Patient was re-admitted

[3] For only those patients who had a follow-up visit, the average number of days after discharge until the visit is presented.

[4] These numbers reflect the 95% confidence interval for the percent of patients admitted.

Table 3: Encounter Utilization Measures

The left two columns of data on Table 3 on the facing page show the number and percent of services provided by the assigned primary physician, other general medicine physicians, specialists, and emergency rooms (see below).

The right two columns of Table 3 show the number and percent of patients. These percents do not sum to 100% because many patients see physicians in more than one category.

Specialists and Emergency Room Use	Data Source	Notes
Assigned primary physician	Self-assigned specialty	The general medicine physician who provided more visits than any other general medicine physician.
Other general medicine physicians	Self-assigned specialty	Internal medicine, family practice, and general practice physicians.
Cardiologists	Self-assigned specialty	Cardiology specialists represent an important source of nonprimary care for IHD patients.
Cardiac/thoracic surgeons	Self-assigned specialty	Patients requiring surgery will generally visit a cardiac or thoracic surgeon.
Other specialists	Self-assigned specialty	Patients with IHD may require a specialist's care for conditions related or unrelated to IHD.
Emergency Room	CPT: 90500-90580	Patients with IHD may seek emergency room treatment for sudden worsening of their condition. In addition, the primary care physician may refer them to the emergency room if a myocardial infarction is suspected.

ISCHEMIC HEART DISEASE

PROVIDER ID: 11 TOTAL

able 3. Encounter Utilization Measures

Service	Number of Services	Percent of Services	Number of Patients	Percent of Patients
Visits to:				
Assigned primary physician	136407	51.51	26480	99.72[5]
Other general medicine physicians	19151	7.23	7954	29.95
Cardiologists	11635	4.39	4646	17.50
Cardiac/thoracic surgeons	1364	0.52	839	3.16
Other specialists	61506	23.23	15962	60.11
Emergency rooms	18274	6.90	9934	37.41

[5] This number does not equal 100% of patients assigned to a primary physician, because some primary patients were seen in the emergency room only.

DEMPAQ CLAIMS REVIEW SYSTEM

CONGESTIVE HEART FAILURE PROFILE
STATE OF MARYLAND

July 1, 1990 - June 30, 1991

[PHYSICIAN NAME: Not A Maryland Provider]
[PHYSICIAN ID: 11 TOTAL]

CONGESTIVE HEART FAILURE PROFILE – INTRODUCTION

This profile presents data for patients with congestive heart failure, defined by a single claim for a visit with the diagnosis code of 402.01, 402.11, 402.91, or 428.xx.

Significance

In the U.S., heart failure affects more than 2 million people and results in 900,000 hospitalizations yearly. Prevalence increases with age and is nearly 10% among persons >80 years of age. Since CHF is an end-stage disease, treatment has limited potential. Prevention, by modifying risk factors and correcting functional disturbances, is a more promising means of reducing morbidity and mortality (Kannel and Belanger, 1991).

Abbreviations

ABFP = American Board of Family Practice
AMI = Acute myocardial infarction
CHF = Congestive heart failure
COPD = Chronic obstructive pulmonary disease
ECG = Electrocardiogram
IHD = Ischemic heart disease

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CONGESTIVE HEART FAILURE

Table 1: Process Measures: Distribution of Services

Table 1, on the facing page, shows the percent of patients receiving 0, 1-2, 3-5, and over 5 services during the year. The last column shows the 95% confidence interval around the percent of patients with 0 services.

Recommended Care	Data Source	Notes
Primary care office (home) visit or visit with cardiologist	CPT: 90000-90080 (90100-90170) 90600-90699 90750,90760	The primary care visit for patients with CHF is important in monitoring drug doses, drug side effects, or symptoms of heart failure. Most primary care practitioners schedule office visits 2-4 months apart (Fleg et al., 1989). For this profile, 2 visits per year are considered minimal care.
Potassium, serum	CPT: 80002-80019 80060,80062 80065,84132	Close monitoring of serum potassium is necessary for patients who are receiving diuretics, as most patients with CHF do (Cohn, 1989).

Limited Use Care	Data Source	Notes
Echocardiography	CPT: 93307-93350	Echocardiography (sonography) can provide accurate measurements of cardiac chambers, wall thickness, and valvular structures (ABFP, CHF Guide, p. 12). This technique should be limited to patients suspected of having cardiac valve disease,.
ECG	CPT: 93000-93014	While ECGs do not confirm the presence or absence of heart failure, they provide clues to the etiology of the failure (ABFP, CHF Guide, p. 11).
Chest x-ray	CPT: 71010-71035	The chest radiograph provides an indication of underlying cardiac abnormality and information regarding the status of the failure itself (ABFP, CHF Guide, p. 11). While useful, the chest x-ray is not a very sensitive screening test for heart failure (Branch, p. 129). The history and signs detected at physical exam are more important for monitoring and managing the patient with CHF.
Contrast angiography	CPT: 93546-93553	Injection of radiographic contrast agent into coronary arteries or left ventricle permits assessment of coronary artery stenosis or ventricular ejection fraction (Harrison's, p. 872-4). This technique is useful only for patients known or suspected to have IHD in addition to CHF.
Exercise stress test (ECG)	CPT: 93015-93018	Stress testing provides information about ventricular function and myocardial ischemia (Harrison's, p. 966). Exercise testing may help identify the cause of heart failure (ABFP, CHF Guide, p. 12). Exercise tolerance is an important tool to evaluate the efficacy of treatment (Cohn, 1988) and to identify a safe range for heart rate during exercise (Merck, p. 280-1). However, exercise testing is contraindicated for patients with unstable angina, probable AMI, severe aortic stenosis or hypertension, or uncontrolled arrhythmias (Branch, p. 57) or for those who are asymptomatic (Branch, p. 63).

CONGESTIVE HEART FAILURE

PROVIDER ID: 11 TOTAL

PROVIDER ID	Specialty Total
SPECIALTY	Internal Medicine

Total number of primary patients with congestive heart failure: 10437

Table 1. Process Measures: Distribution of Services

	% of Pts. Receiving This # Services During Year				Conf Int % with 0*
RECOMMENDED CARE	0	1-2	3-5	>5	
General medical visits (first 6 months)	7.3	33.0	37.9	21.7	6.8- 7.8
General medical visits (last 6 months)	11.2	30.6	35.9	22.4	10.6-11.8
Serum potassium	32.3	35.0	21.7	11.0	31.4-33.2
LIMITED USE CARE					
Echocardiography	86.4	10.4	2.9	0.3	85.7-87.1
ECG	28.2	45.2	20.3	6.3	27.3-29.0
Chest x-ray	40.5	44.9	12.3	2.3	39.6-41.5
Contrast angiography	99.8	0.2	0.0	0.0	99.7-99.9
Exercise stress test	94.2	5.5	0.2	0.1	93.8-94.7

*These numbers reflect the 95% confidence interval around the percent of patients who had no services. The upper and lower limits are likely to contain the true percent, and the limits will be narrower if the data sample contains many patients. Percents from specialty groups will not necessarily fall into the confidence intervals. However, the confidence interval around the specialty group percent should overlap the statewide interval.

TAble 1a. Process Measures: Distribution of Services -- Age

Table 1a, on the facing page, shows the same information as Table 1 for patients age 65-79. Again, the confidence limits give upper and lower limits for where the true percent lies. If you compare Tables 1a and 1b, and the confidence intervals for percent of patients with zero services do not overlap, then the patients age 65-79 and age 80+ are significantly different.

CHF AND AGE 65-79

ROVIDER ID	Specialty Total
SPECIALTY	Internal Medicine
otal number of primary patients with CHF and age 65-79: 7490	

T ble 1A. Process Measures: Distribution of Services

	% of Pts. Receiving This # Services During Year				Conf Int % with 0*
RECOMMENDED CARE	0	1-2	3-5	>5	
General medical visits (first 6 months)	8.0	32.3	36.9	22.8	7.4- 8.6
General medical visits (last 6 months)	10.8	30.1	35.6	23.5	10.1-11.5
Serum potassium	33.1	34.0	21.5	11.4	32.0-34.1
LIMITED USE CARE					
Echocardiography	85.0	11.4	3.2	0.3	84.2-85.8
ECG	27.2	45.3	20.7	6.7	26.2-28.3
Chest x-ray	39.6	45.2	12.7	2.5	38.5-40.7
Contrast angiography	99.7	0.3	0.0	0.0	99.6-99.8
Exercise stress test	92.7	6.9	0.2	0.2	92.1-93.3

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*These numbers reflect the 95% confidence interval around the percent of patients who had no services. The upper and lower limits are likely to contain the true percent, and the limits will be narrower if the data sample contains many patients. Percents from specialty groups will not necessarily fall into the confidence intervals. However, the confidence interval around the specialty group percent should overlap the statewide interval.

Table 1b. Process Measures: Distribution of Services

Table 1b, on the facing page, shows the same information as Table 1 for patients age 80+. Again, the confidence limits give upper and lower limits for where the true percent lies. If you compare Tables 1a and 1b, and the confidence intervals for percent of patients with zero services do not overlap, then the patients age 65-79 and age 80+ are significantly different.

CHF AND AGE 80+

PROVIDER ID	Specialty Total
SPECIALTY	Internal Medicine

Total number of primary patients with CHF and age 80+: 2947

Table 1B. Process Measures: Distribution of Services

	% of Pts. Receiving This # Services During Year				Conf Int % with 0*
RECOMMENDED CARE	0	1-2	3-5	>5	
General medical visits (first 6 months)	5.8	34.7	40.4	19.1	5.0- 6.6
General medical visits (last 6 months)	12.1	32.0	36.4	19.4	11.0-13.3
Serum potassium	30.4	37.6	22.0	10.0	28.8-32.1
LIMITED USE CARE					
Echocardiography	89.9	7.9	2.0	0.2	88.8-91.0
ECG	30.5	45.0	19.2	5.3	28.8-32.2
Chest x-ray	42.9	44.2	11.1	1.8	41.1-44.7
Contrast angiography	100.0	0.0	0.0	0.0	99.8- 100
Exercise stress test	98.0	1.9	0.0	0.0	97.5-98.5

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*These numbers reflect the 95% confidence interval around the percent of patients who had no services. The upper and lower limits are likely to contain the true percent, and the limits will be narrower if the data sample contains many patients. Percents from specialty groups will not necessarily fall into the confidence intervals. However, the confidence interval around the specialty group percent should overlap the statewide interval.

Table 1c. Process Measures: Distribution of Services -- Two Conditions

Table 1c, on the facing page, shows the same information as Table 1 for patients with hypertension and ischemic heart disease. If you compare Tables 1 and 1c, and the confidence intervals for percent of patients with zero services do not overlap, then the patients who have two conditions are significantly different from patients with a single condition.

Please note that there are more services listed on Table 1c than on Table 1 because these measures relate to both conditions.

CHF AND COPD

PROVIDER ID	Specialty Total
SPECIALTY	Internal Medicine

Total number of primary patients with CHF and COPD: 1657

Table 1C. Process Measures: Distribution of Services

	% of Pts. Receiving This # Services During Year				Conf Int % with 0*
RECOMMENDED CARE	0	1-2	3-5	>5	
General medical visits (first 6 months)	6.8	23.7	39.0	30.5	5.6- 8.0
General medical visits (last 6 months)	10.3	23.6	36.4	29.8	8.8-11.8
Serum potassium	27.0	34.2	25.2	13.6	24.9-29.2
LIMITED USE CARE					
Echocardiography	85.5	11.8	2.4	0.4	83.7-87.1
ECG	23.6	45.3	22.9	8.1	21.6-25.7
Chest x-ray	27.8	47.4	20.7	4.1	25.7-30.0
Contrast angiography	99.9	0.1	0.0	0.0	99.7- 100
Excercise stress test	93.0	6.6	0.2	0.2	91.7-94.1
Blood gases	85.6	9.9	2.4	2.1	83.8-87.2
Home oxygen therapy	78.3	4.2	3.3	14.2	76.3-80.2
Spirometry	76.5	19.6	2.8	1.1	74.4-78.5

*These numbers reflect the 95% confidence interval around the percent of patients who had no services. The upper and lower limits are likely to contain the true percent, and the limits will be narrower if the data sample contains many patients. Percents from specialty groups will not necessarily fall into the confidence intervals. However, the confidence interval around the specialty group percent should overlap the statewide interval.

Table 1d. Process Measures: Distribution of Services

Table 1d, on the facing page, shows the same information as Table 1 for patients with hypertension and ischemic heart disease. If you compare Tables 1 and 1d, and the confidence intervals for percent of patients with zero services do not overlap, then the patients who have two conditions are significantly different from patients with a single condition.

Please note that there are more services listed on Table 1d than on Table 1 because these measures relate to both conditions.

CHF AND IHD

PROVIDER ID	Specialty Total
SPECIALTY	Internal Medicine
Total number of primary patients with CHF and IHD: 4391	

Table 1D. Process Measures: Distribution of Services

	% of Pts. Receiving This # Services During Year				Conf Int % with 0*
RECOMMENDED CARE	0	1-2	3-5	>5	
General medical visits (first 6 months)	5.9	27.6	39.0	27.5	5.2- 6.6
General medical visits (last 6 months)	9.7	24.8	36.9	28.6	8.8-10.5
Serum potassium	29.2	32.3	24.2	14.3	27.9-30.5
LIMITED USE CARE					
Echocardiography	82.9	12.9	3.8	0.5	81.7-84.0
ECG	16.9	42.9	29.1	11.2	15.8-18.0
Chest x-ray	33.3	47.3	15.9	3.5	31.9-34.7
Contrast angiography	99.6	0.4	0.0	0.0	99.4-99.8
Excercise stress test	90.1	7.8	1.5	0.6	89.2-91.0
Total cholesterol	38.2	24.1	19.1	18.6	36.8-39.6
HDL cholesterol	70.0	22.3	6.6	1.2	68.6-71.3
Coronary catheterization	99.6	0.4	0.0	0.0	99.4-99.8
Exercise stress test	90.1	7.8	1.5	0.6	89.2-91.0
Radionuclide study without exercise	97.3	2.4	0.3	0.0	96.8-97.7
Radionuclide study with exercise	94.9	5.0	0.2	0.0	94.2-95.5

*These numbers reflect the 95% confidence interval around the percent of patients who had no services. The upper and lower limits are likely to contain the true percent, and the limits will be narrower if the data sample contains many patients. Percents from specialty groups will not necessarily fall into the confidence intervals. However, the confidence interval around the specialty group percent should overlap the statewide interval.

CONGESTIVE HEART FAILURE

Table 2: Hospital Admissions for Treatment of Selected Complications

Table 2, on the facing page, shows the number of patients admitted for selected complications, number of admissions (equal to or greater than number of patients), percent admitted, percent discharged who did not have a follow-up visit, and average days from discharge to the first follow-up visit or readmission. Because the complications have potential important impact, follow-up should be fairly prompt. High admission rates may reflect patients with more severe disease or may reflect inadequate ambulatory management.

The last column shows the 95% confidence level for the percent of patients admitted. When comparing two groups of physicians, if the confidence limits do not overlap, then the two groups are different.

Selected Complications	Data Source	Notes
Congestive heart failure	ICD9: 402.01,402.11 402.91 428.0-428.9 429.9	Hospitalization for CHF is often due to poor patient adherence to dietary and medical regimes, inadequate physician responses to early signs of CHF decompensation, or both.
Arrhythmias	ICD9: 427.0-427.9	Arrhythmia is both a cause and a complication of heart failure (Harrison's, p. 891; Cohn, 1988).
Pulmonary embolism	ICD9: 415.1	Low cardiac output, sometimes present in CHF, increases the risk of pulmonary emboli (Harrison's, p. 890).
Volume depletion	ICD9: 276.5	Overtreatment of the CHF patient with diuretics may lead to hypovolemia (Harrison's, p. 895), and hospitalization may be necessary to restore fluid and electrolyte balance.

CONGESTIVE HEART FAILURE

PROVIDER ID: 11 TOTAL

able 2. Hospital Admission for Treatment of Selected Complications

Condition	Patients Admitted[1]	Number of Admissions	Percent Admitted	% dischrgs no visit[2]	Avg days until visit[3]	Conf Int % admitd[4]
Congestive Heart Failure	2429	3246	23.27	13.97	20.57	22.46-24.0
Arrhythmias	530	620	5.08	11.81	20.57	4.66- 5.50
Pulmonary embolism	34	36	0.33	15.15	20.93	0.22- 0.44
Volume depletion	199	225	1.91	18.40	18.42	1.65- 2.17

[1] If patients have more than one hospitalized complication, they are included in each category.

[2] Some patients were discharged to home (i.e., did not die in the hospital or enter a skilled nursing facility) but had no follow-up ambulatory visits. There are many possible explanations:

- Patient was discharged near the end of the study period so no follow-up dates
- Patient died shortly after discharge
- No follow-up visit occurred
- Patient was re-admitted

[3] For only those patients who had a follow-up visit, the average number of days after discharge until the visit is presented.

[4] These numbers reflect the 95% confidence interval for the percent of patients admitted.

CONGESTIVE HEART FAILURE

Table 3: Encounter Utilization Measures

The left two columns of data on Table 3 on the facing page show the number and percent of services provided by the assigned primary physician, other general medicine physicians, specialists, and emergency rooms (see below).

The right two columns of Table 3 show the number and percent of patients. These percents do not sum to 100% because many patients see physicians in more than one category.

Specialists and Emergency Room Use	Data Source	Notes
Assigned primary physician	Self-assigned specialty	The general medicine physician who provided more visits than any other general medicine physician.
Other general medicine physicians	Self-assigned specialty	Internal medicine, family practice, and general practice physicians.
Cardiologist	Self-assigned specialty	Cardiology specialists represent an important source of nonprimary care for patients with CHF.
Other specialists	Self-assigned specialty	Patients with CHF may require a specialist's care for conditions related or unrelated to CHF.
Emergency Room	CPT: 90500-90580	Patients with CHF may seek emergency room treatment for sudden worsening of their condition. Use of the emergency room may indicate failure of control in the ambulatory care setting or failure of patient compliance with therapy.

CONGESTIVE HEART FAILURE

PROVIDER ID: 11 TOTAL

Table 3. Encounter Utilization Measures

Service	Number of Services	Percent of Services	Number of Patients	Percent of Patients
Visits to:				
Assigned primary physician	64318	55.20	10405	99.69[5]
Other general medicine physicians	8677	7.45	3264	31.27
Cardiologists	4250	3.65	1386	13.28
Other specialists	28342	24.33	6849	65.62
Emergency rooms	10921	9.37	5362	51.37

[5] This number does not equal 100% of patients assigned to a primary physician, because some primary patients were seen in the emergency room only.

DEMPAQ CLAIMS REVIEW SYSTEM

COPD PROFILE
STATE OF MARYLAND

July 1, 1990 - June 30, 1991

[PHYSICIAN NAME: Not A Maryland Provider]
[PHYSICIAN ID: 11 TOTAL]

CHRONIC OBSTRUCTIVE PULMONARY DISEASE PROFILE – INTRODUCTION

This profile presents data for patients with chronic obstructive pulmonary disease, defined by a single claim for a visit, with the diagnosis code of 491, 491.0-491.9, 492, 492.0, 492.8, or 496.

Significance

COPD (emphysema or bronchitis) affects nearly 10% of the U.S. population over 65 years of age and accounts for about 147,000 hospitalizations annually for that age group. Since COPD is incurable, the goal of management is preservation of function and avoidance of complications (NCHS; Goroll, p. 214).

Abbreviations

ABFP = American Board of Family Practice
CHF = Congestive heart failure
COPD = Chronic obstructive pulmonary disease
NCHS = National Center for Health Statistics

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CHRONIC OBSTRUCTIVE PULMONARY DISEASE PROFILE

Table 1: Process Measures: Distribution of Services

Table 1, on the facing page, shows the percent of patients receiving 0, 1-2, 3-5, and over 5 services during the year. The last column shows the 95% confidence interval around the percent of patients with 0 services.

Recommended Care	Data Source	Notes
Primary care office (home) visit	CPT: 90000-90080 (90100-90170) 90600-90699 90750,90760	The primary care visit is important in monitoring the course of a progressive disease. A minimum of 3 visits per year is recommended by the ABFP (COPD Guide, p. 35). For this profile, 2 visits per year are considered minimal care.

Limited Use Care	Data Source	Notes
Spirometry	CPT: 94010-94200	Spirometry provides a measure of a patient's vital capacity and lung functioning. The ABFP COPD Guide (p. 35) recommends that spirometry be performed at every routine visit. Spirometry has been placed in the limited use column to reflect that patients with mild disease may not require frequent or even yearly spirometry.
Chest x-ray	CPT: 71010-71035	A chest x-ray is important in patients with exacerbations of disease to check for pneumonia. Chest x-rays can also assist in making a diagnosis of CHF for patients with COPD. Chest x-rays also can provide information about hyperinflation and changes in vascular markings (Scientific American, Chronic Obstructive Disease of the Lung, p. 11). The ABFP COPD Guide (p. 35) suggests that yearly chest x-rays may be warranted by the patient's clinical condition.
Home oxygen therapy	CPT: E0410,E0416, E0425,E0430, E1400,Q0043, Q0046	Patients with severe COPD (pO_2 <60mm Hg) may benefit from home O_2 therapy (Goroll, p. 218), but the need should be documented. Physicians with a higher proportion of patients on home oxygen therapy than the statewide average may have a patient population that is more severely ill.
Blood gases	CPT: 82790-82817 94700-94715	Blood gases are important to measure oxygenation of the blood and CO_2 retention, factors which may affect the treatment plan. Yearly measurement of blood gases is recommended by the ABFP (COPD Guide, p. 35). Blood gases have been placed in the limited use column to reflect the fact that patients with mild disease may not need a yearly blood gas determination. (Note: Blood gas measurements done in hospital are excluded.)

COPD

PROVIDER ID: 11 TOTAL

PROVIDER ID	Specialty Total
PECIALTY	Internal Medicine

Total number of primary patients with copd: 11740

Table 1. Process Measures: Distribution of Services

	% of Pts. Receiving This # Services During Year				Conf Int % with 0*
RECOMMENDED CARE	0	1-2	3-5	>5	
General medical visits (first 6 months)	9.6	40.6	33.8	16.0	9.0-10.1
General medical visits (last 6 months)	11.3	37.7	34.6	16.4	10.7-11.9
LIMITED USE CARE					
Spirometry	74.3	22.2	2.7	0.9	73.5-75.1
Chest x-ray	38.6	49.1	10.5	1.8	37.7-39.4
Home oxygen therapy	88.6	1.8	1.5	8.1	88.0-89.1
Blood gases	91.5	6.2	1.1	1.2	91.0-92.0

*These numbers reflect the 95% confidence interval around the percent of patients who had no services. The upper and lower limits are likely to contain the true percent, and the limits will be narrower if the data sample contains many patients. Percents from specialty groups will not necessarily fall into the confidence intervals. However, the confidence interval around the specialty group percent should overlap the statewide interval.

Table 1c. Process Measures: Distribution of Services – Two Conditions

Table 1c, on the facing page, shows the same information as Table 1 for patients with congestive heart failure and chronic obstructive pulmonary disease. If you compare Tables 1 and 1c, and the confidence intervals for percent of patients with zero services do not overlap, then the patients who have two conditions are significantly different from patients with a single condition.

Please note that there are more services listed on Table 1c than on Table 1 because these measures relate to both conditions.

CHF AND COPD

PROVIDER ID	Specialty Total
SPECIALTY	Internal Medicine

Total number of primary patients with CHF and COPD: 1657

able 1C. Process Measures: Distribution of Services

	% of Pts. Receiving This # Services During Year				Conf Int % with 0*
RECOMMENDED CARE	0	1-2	3-5	>5	
General medical visits (first 6 months)	6.8	23.7	39.0	30.5	5.6- 8.0
General medical visits (last 6 months)	10.3	23.6	36.4	29.8	8.8-11.8
Serum potassium	27.0	34.2	25.2	13.6	24.9-29.2
LIMITED USE CARE					
Echocardiography	85.5	11.8	2.4	0.4	83.7-87.1
ECG	23.6	45.3	22.9	8.1	21.6-25.7
Chest x-ray	27.8	47.4	20.7	4.1	25.7-30.0
Contrast angiography	99.9	0.1	0.0	0.0	99.7- 100
Excercise stress test	93.0	6.6	0.2	0.2	91.7-94.1
Blood gases	85.6	9.9	2.4	2.1	83.8-87.2
Home oxygen therapy	78.3	4.2	3.3	14.2	76.3-80.2
Spirometry	76.5	19.6	2.8	1.1	74.4-78.5

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*These numbers reflect the 95% confidence interval around the percent of patients who had no services. The upper and lower limits are likely to contain the true percent, and the limits will be narrower if the data sample contains many patients. Percents from specialty groups will not necessarily fall into the confidence intervals. However, the confidence interval around the specialty group percent should overlap the statewide interval.

Table 2: Hospital Admissions for Treatment of Selected Complications

Table 2, on the facing page, shows the number of patients admitted for selected complications, number of admissions (equal to or greater than number of patients), percent admitted, percent discharged who did not have a follow-up visit, and average days from discharge to the first follow-up visit or readmission. Because the complications have potential important impact, follow-up should be fairly prompt. High admission rates may reflect patients with more severe disease or may reflect inadequate ambulatory management.

The last column shows the 95% confidence level for the percent of patients admitted. When comparing two groups of physicians, if the confidence limits do not overlap, then the two groups are different.

Selected Complications	Data Source	Notes
Pneumonia	ICD9: 480.0–486	Pneumonia due to viruses or bacteria may exacerbate bronchitis in patients with COPD (Merck Manual of Geriatrics, p. 447).
Acute bronchitis	ICD9: 466.0,490 491.21	An acute attack of bronchitis in an elderly person with COPD is usually due to viral infection (Cassel et al., p. 371).
Influenza	ICD9: 487.0–487.8	Viral infections (e.g., influenza) may lead to exacerbation of bronchitis in patients with COPD (Merck Manual of Geriatrics, p. 447).
Congestive heart failure	ICD9: 402.01,402.11 402.91 428.0–428.9 429.9	Heart failure is a common form of cardiac decompensation in elderly patients with COPD (Merck Manual of Geriatrics, p. 451).

COPD

PROVIDER ID: 11 TOTAL

ble 2. Hospital Admission for Treatment of Selected Complications

Condition	Patients Admitted[1]	Number of Admissions	Percent Admitted	% dischrgs no visit[2]	Avg days until visit[3]	Conf Int % admitd[4]
Pneumonia	623	695	5.31	11.95	18.27	4.90- 5.71
Acute bronchitis	331	393	2.82	10.66	22.55	2.52- 3.12
Influenza	2	2	0.02	0.00	38.00	0.00- 0.04
CHF	569	776	4.85	14.12	20.19	4.46- 5.24

[1] If patients have more than one hospitalized complication, they are included in each category.

[2] Some patients were discharged to home (i.e., did not die in the hospital or enter a skilled nursing facility) but had no follow-up ambulatory visits. There are many possible explanations:

- Patient was discharged near the end of the study period so no follow-up dates
- Patient died shortly after discharge
- No follow-up visit occurred
- Patient was re-admitted

[3] For only those patients who had a follow-up visit, the average number of days after discharge until the visit is presented.

[4] These numbers reflect the 95% confidence interval for the percent of patients admitted.

Table 3: Encounter Utilization Measures

The left two columns of data on Table 3 on the facing page show the number and percent of services provided by the assigned primary physician, other general medicine physicians, specialists, and emergency rooms (see below).

The right two columns of Table 3 show the number and percent of patients. These percents do not sum to 100% because many patients see physicians in more than one category.

Specialists and Emergency Room Use	Data Source	Notes
Assigned primary physician	Self-assigned specialty	The general medicine physician who provided more visits than any other general medicine physician.
Other general medicine physicians	Self-assigned specialty	Internal medicine, family practice, and general practice physicians.
Pulmonary specialist	Self-assigned specialty	Pulmonary specialists represent an important source of nonprimary care for COPD patients.
Cardiologist	Self-assigned specialty	Since CHF is often found with COPD, a patient with lung disease may seek care from a cardiologist.
Other specialists	Self-assigned specialty	Patterns of care-seeking by COPD patients may include use of specialists other than pulmonary and cardiac specialists.
Emergency Room	CPT: 90500-90580	Patients with COPD may seek emergency room treatment for acute exacerbations of their pulmonary disease.

COPD

PROVIDER ID: 11 TOTAL

Table 3. Encounter Utilization Measures

Service	Number of Services	Percent of Services	Number of Patients	Percent of Patients
Visits to:				
Assigned primary physician	63207	54.26	11698	99.64[5]
Other general medicine physicians	8240	7.07	3338	28.43
Pulmonry specialists	3405	2.92	1020	8.69
Cardiologists	1922	1.65	718	6.12
Other specialists	27457	23.57	6689	56.98
Emergency rooms	8378	7.19	4211	35.87

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[5] This number does not equal 100% of patients assigned to a primary physician, because some primary patients were seen in the emergency room only.

DEMPAQ CLAIMS REVIEW SYSTEM

OSTEOARTHRITIS PROFILE
STATE OF MARYLAND

July 1, 1990 - June 30, 1991

[PHYSICIAN NAME: Not A Maryland Provider]
[PHYSICIAN ID: 11 TOTAL]

OSTEOARTHRITIS PROFILE – INTRODUCTION

This profile presents data for patients with osteoarthritis, defined by a single claim for a visit with the diagnosis code of 715.xx.

Significance

A result of aging, OA is the leading cause of disability in the elderly and each year accounts for over 400,000 hospitalizations among that age group in the U.S. Therapeutic goals are pain relief, prevention of further joint damage, and maintenance of functional independence (Goroll, p. 696; NCHS).

Abbreviations

ABFP = American Board of Family Practice
GI = Gastrointestinal
NCHS = National Center for Health Statistics
NSAIDs = Nonsteroidal antiinflammatory drugs
OA = Osteoarthritis
PT = Physical therapy

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OSTEOARTHRITIS

Table 1: Process Measures: Distribution of Services

Table 1, on the facing page, shows the percent of patients receiving 0, 1-2, 3-5, and over 5 services during the year. The last column shows the 95% confidence interval around the percent of patients with 0 services.

Recommended Care	Data Source	Notes
Primary care office (home) visit	CPT: 90000-90080 (90100-90170) 90600-90699 90750,90760	The primary care visit is important in monitoring the course of a progressive disease. The American College of Rheumatology (p. 12) suggests a minimum of an annual visit to a primary care physician. Any patient who appears in this profile meets this minimum requirement.

Limited Use Care	Data Source	Notes
Physical therapy visits	CPT: 97110-97799 97145	Physical therapy can play an important role in aiding an individual with osteoarthritis to maintain or improve flexibility and mobility. Cassell (p. 190) suggests that physical therapy visits are an important part of a total therapeutic plan for arthritis. Physical therapy is listed as a limited use item because not all patients will require the specialized services offered by PT.
Diathermy	CPT: 97024	Diathermy generates heat aimed at specific joints, thereby relieving the discomfort of arthritis and improving the patient's mobility. Although heat is often recommended for arthritic patients, the mechanism of benefit is unknown (Scientific American, p. 7). Goroll suggests that diathermy may be an expensive alternative where simpler measures would suffice (p. 698).
Ultrasound	CPT: 97128	Therapeutic ultrasound warms affected joints. As with diathermy, Goroll (p. 698) suggests that less expensive methods for relieving pain and discomfort exist.
Hot or cold packs	CPT: 97010	Hot or cold packs represent the inexpensive alternative to ultrasound and diathermy. As mentioned above, the mechanism of benefit for heat or cold is unknown (Scientific American, p. 7).
Exercises	CPT: 97110-97114 97260-97261 97530-97531	Passive range-of-motion exercise can sometimes aid the maintenance of joint motion (Scientific American, p. 7). Active exercise may help preserve muscle strength (Scientific American, p. 7). Isometric exercises may also help (Scientific American, p. 7). The benefit from exercise will depend on the individual patient, hence the inclusion as a limited use item.

OSTEOARTHRITIS

PROVIDER ID: 11 TOTAL

PROVIDER ID	Specialty Total
SPECIALTY	Internal Medicine

Total number of primary patients with osteoarthritis: 16953

Table 1. Process Measures: Distribution of Services

	% of Pts. Receiving This # Services During Year				Conf Int % with 0*
RECOMMENDED CARE	0	1-2	3-5	>5	
General medical visits (first 6 months)	10.9	45.8	31.6	11.6	10.5-11.4
General medical visits (last 6 months)	11.8	43.3	32.4	12.5	11.3-12.3
LIMITED USE CARE					
Physical therapy visits	94.5	2.3	0.9	2.3	94.1-94.8
Diathermy	90.1	9.8	0.0	0.0	89.7-90.6
Ultrasound	97.4	1.2	0.6	0.8	97.2-97.6
Hot or cold packs	98.2	0.5	0.5	0.8	97.9-98.3
Exercises	97.6	0.9	0.5	1.0	97.4-97.8

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*These numbers reflect the 95% confidence interval around the percent of patients who had no services. The upper and lower limits are likely to contain the true percent, and the limits will be narrower if the data sample contains many patients. Percents from specialty groups will not necessarily fall into the confidence intervals. However, the confidence interval around the specialty group percent should overlap the statewide interval.

Table 2: Hospital Admissions for Treatment of Selected Complications

Table 2, on the facing page, shows the number of patients admitted for selected complications, number of admissions (equal to or greater than number of patients), percent admitted, percent discharged who did not have a follow-up visit, and average days from discharge to the first follow-up visit or readmission. Because the complications have potential important impact, follow-up should be fairly prompt. High admission rates may reflect patients with more severe disease or may reflect inadequate ambulatory management.

The last column shows the 95% confidence level for the percent of patients admitted. When comparing two groups of physicians, if the confidence limits do not overlap, then the two groups are different.

Selected Complications	Data Source	Notes
Osteoarthritis	ICD9: 715.xx	Patients with severe arthritis may occasionally require hospitalization for the management of their arthritis or its complications (American College of Rheumatology, p. 12).
Hip replacement	CPT: 27130-27138 ICD9: 81.51-81.53 81.61-81.69	Patients with advanced hip disease may be candidates for hip replacement (Scientific American, p. 8; Harrison's, p. 1479).
Knee replacement	CPT: 27437-27447 ICD9: 81.41,81.54	Patients with advanced knee disease may be candidates for knee replacement (Scientific American, p. 8; Merck Manual of Geriatrics, p. 756).
Acute renal failure	ICD9: 584.xx 586.xx	Prolonged treatment with NSAIDs can lead to acute renal failure. Although drugs are not included in the claims data base, the sequelae are included. This component includes patients with a variety of etiologies (Scientific American, p. 7; Cassel, p. 191).
GI bleeding or ulcer	ICD9: 531.00-535.61 578.0-578.9	A common side effect of treatment with NSAIDs is GI bleeding or ulceration. Many patients with OA will be taking NSAIDs. This component includes patients with a variety of etiologies (Cassel, p. 191).

OSTEOARTHRITIS

PROVIDER ID: 11 TOTAL

ble 2. Hospital Admission for Treatment of Selected Complications

Condition	Patients Admitted[1]	Number of Admissions	Percent Admitted	% dischrgs no visit[2]	Avg days until visit[3]	Conf Int % admitd[4]
Osteoarthritis	785	841	4.63	31.72	62.05	4.31- 4.95
Hip replacement	320	341	1.89	33.83	71.81	1.68- 2.09
Knee replacement	542	561	3.20	32.63	59.66	2.93- 3.46
Acute renal failure	14	15	0.08	44.44	19.00	0.04- 0.13
GI bleeding or ulcer	174	181	1.03	10.71	25.46	0.88- 1.18

[1] If patients have more than one hospitalized complication, they are included in each category.

[2] Some patients were discharged to home (i.e., did not die in the hospital or enter a skilled nursing facility) but had no follow-up ambulatory visits. There are many possible explanations:

- Patient was discharged near the end of the study period so no follow-up dates
- Patient died shortly after discharge
- No follow-up visit occurred
- Patient was re-admitted

[3] For only those patients who had a follow-up visit, the average number of days after discharge until the visit is presented.

[4] These numbers reflect the 95% confidence interval for the percent of patients admitted.

OSTEOARTHRITIS

Table 3: Encounter Utilization Measures

The left two columns of data on Table 3 on the facing page show the number and percent of services provided by the assigned primary physician, other general medicine physicians, specialists, and emergency rooms (see below).

The right two columns of Table 3 show the number and percent of patients. These percents do not sum to 100% because many patients see physicians in more than one category.

Specialists and Emergency Room Use	Data Source	Notes
Assigned primary physician	Self-assigned specialty	The general medicine physician who provided more visits than any other general medicine physician.
Other general medicine physicians	Self-assigned specialty	Internal medicine, family practice, and general practice physicians.
Orthopedic surgeons	Self-assigned specialty	Patients with severe limitation of motion may require joint replacement by an orthopedic surgeon.
Other specialists	Self-assigned specialty	
Emergency Room	CPT: 90500-90580	Patients may visit the emergency room for reasons related or unrelated to OA. Sometimes, however, the patient uses the emergency room as the primary source of care.
X-rays: Foot	CPT: 73620,73630	Patients with osteoarthritis may require various joint x-rays to monitor the course of their disease (ABFP, Osteoarthritis Guide, p. 8).
Hip	CPT: 73500,73510 73520,73525 73526,73530	
Knee	CPT: 73560,73562 73564,73580 73581	
Spine	CPT: 72010,72020 72040,72050 72052,72072 72074,72080 72090,72100 72110,72114 72120	

OSTEOARTHRITIS

PROVIDER ID: 11 TOTAL

able 3. Encounter Utilization Measures

Service	Number of Services	Percent of Services	Number of Patients	Percent of Patients
Visits to:				
Assigned primary physician	80734	48.90	16931	99.87[5]
Other general medicine physicians	12238	7.41	5035	29.70
Orthopedic surgeons	0	0.00	0	0.00
Other specialists	49325	29.88	11850	69.90
Emergency rooms	6532	3.96	4049	23.88
X-rays:				
Foot x-ray	2599	100.00	1575	9.29
Hip x-ray	3541	100.00	2159	12.74
Knee x-ray	7087	100.00	3954	23.32
Spine x-ray	4420	100.00	3201	18.88

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[5] This number does not equal 100% of patients assigned to a primary physician, because some primary patients were seen in the emergency room only.

Appendix 2

DEMPAQ Claims Review System
CME Workshop

DIABETES
Instructor's Version
October 27, 1993

Results	Discussion Question	Issue or Point
HbA1	• What is rate of patients receiving one or more HbA1 tests? • Is this rate higher or lower than expected? • Do you believe this result? • How do you interpret this result? • What monitoring do you do?	• Can you read the table? This answer requires subtracting from 100. • Answer should come from worksheet • May be some debate about appropriate role of HbA1 • **Recommended care items should have a low percentage of patients with zero services.**
Eye Visits	• What percentage of patients had no ophthalmologic exams? • How important are regular eye exams for diabetic patients? • Do you know whether your diabetic patients have their eyes examined regularly? How do you know? (POSSIBLE ANSWERS: I always ask them. They tell me. I refer them. I get a note from the ophthalmologist.)	• Can you read the table? • Validity • **Claims most complete way to get this information.**

Results	Discussion Question	Issue or Point
Blood glucose	• What percentage of diabetic patients did not receive at least one blood glucose in the study period? • How do you interpret this result? (POSSIBLE ANSWERS: - They monitor at home. - I don't think it is useful. - I use HbA1 or fructosamine.)	• Can you read the table? • **To interpret limited use items, need to keep in mind alternative explanations for findings. Here, the percentage of patients receiving a blood glucose is affected by home monitoring, etc.**
Lower Extremity Amputation	• According to Table 2, what is the most frequent complication of diabetes leading to hospitalization?	• Can you read the table? • There are other complications of diabetes that we didn't list. • For this profile, we chose complications that could be aggravated by poor ambulatory care

Results	Discussion Question	Issue or Point
Days until visit	• Where do patients go after being discharged from the hospital? (POSSIBLE ANSWERS: - home - other hospital - rehab facility - SNF - death) • What are some of the factors that might influence the average number of days after discharge until an office visit?	• Patients discharged to another facility will have long avg. days until visit. • **Must keep in mind alternative explanations.** • **Be wary of the small n** • This is visits to any physician in the office, specialist or primary care physician. • Patients without ambulatory visits - discharged near end of study period so no follow-up dates - patient died shortly after discharge - patient re-admitted - no follow-up visit occurred
Podiatrist	• Is this number higher or lower than expected? • How many specialists do you think your patients see? • What are some factors that affect the number of specialists your patients see?	• Expectation depends on how many specialists you think your patients see. • Breadth of claims, get all utilization by patient, not just what you might know about. • **Depends on supply of specialists. Patient can't see podiatrist is there are none around.**

DEMPAQ Claims Review System
CME Workshop

HYPERTENSION
Instructor's Version
October 27, 1993

Results	Discussion Question	Issue or Point
Visit 1st six months	• How important is it for hypertensive patients to be seen in each half year? • Would it be more valid to search for two visits at least 4 or 5 months apart?	• Validity • Data do not show twice a year. • How often should patients with HTN be seen? • Recommended care items should have a low percentage of patients with zero services. • Appears to be good compliance with guideline.

Results	Discussion Question	Issue or Point
Potassium	• For which hypertensive patients is a serum potassium important? (POSSIBLE ANSWERS: - those on diuretic therapy) • Considering the proportion of patients for whom a serum potassium is important, does this figure appear high or low? • What are some possible comparisons that would help make these data interpretable? (POSSIBLE ANSWERS: - own experience - time trends - stratifications • What might inflate the percentage of patients receiving a serum potassium? (ANSWER: - panels)	• **Limited use items are often "recommended care" for a subset of patients** • **Need to compare limited use items to something. Data scraps acquire meaning through comparison.** • **Comparisons** **- own experience** **- time trends** **- stratifications** • **Be aware of which tests appear in panels when interpreting the results**
Areas of difference	• What differences do you find? (POSSIBLE ANSWERS: - younger patients more likely to get triglycerides - younger patients more likely to get total cholesterol - older patients more likely to have a visit • What differences do you expect to find based on age? (POSSIBLE ANSWERS: - none - in the direction found)	• Can you read the table?

Results	Discussion Question	Issue or Point
Triglycerides	• Are the differences between 1a and 1b statistically significant? (YES) • Are the differences clinically important? (NO)	• **Large sample sizes can create statistically significant differences that are not necessarily clinically important. Must keep in mind the clinical significance of findings.**
Patients with IHD	• What proportion of all HTN patients have IHD? • Does this proportion reflect your experience?	• Can you manipulate the data? • Validity
IHD Cholesterol	• Are hypertensive patients with IHD more or less likely to have total cholesterol measured? (MORE) • Why	• Is this a clinical issue or an artifact of sicker patients being seen more often and so having more opportunity to be tested?
TIA vs CVA	• Regarding Table 2, why is the rate for TIA about half that of cerebrovascular accident?	• TIA's may not get hospitalized.
Cardiologist	• Regarding Table 3, what percent of hypertensive patients in the study visit cardiologist? • Is this higher or lower than expected? Why?	• Can you read the table? • Don't forget specialty supply as an issue.

Chapter 6
Records Reports

Abstract
This chapter describes the records reports that were designed for participant and nonparticipant feedback. It also presents the results of an evaluation of the usefulness of the reports to the physician.

Four types of reports were fed back to physicians: clinical item, indicator summary, function summary, and record documentation. These reports were prepared at the specialty level and, for those physicians who submitted records, at the individual level.

Results of an evaluation questionnaire show that, when asked about specific types of tables, respondents found the tables easy to understand and generally informative. As with the claims data, the respondents were less likely to find the data provocative.

A complete example of an individual's report book is shown as Appendix 1.

The methodology for developing the record reports has been described elsewhere (see *Final Report*, Chapter 11). This chapter describes the record reporting format and presents the results of an evaluation of the report.

Types of Reports

The tables in the record report book were developed to be unique to the practice of a particular physician. They were designed to meet several objectives:

- To be easily understood;
- To clearly present complex information;
- To provide a measure allowing the physician to compare his or her performance to that of his or her peer group.

Four different types of reports are included in the report book: Clinical Item; Indicator Summary; Function Summary; and Record Documentation. The book opened with several introductory sections explaining the philosophy and structure of the DEMPAQ project. As with the CME workbook (see Chapter 3, this report), these reports were distributed both to individuals who had and who had not attended the workshop and therefore needed to include background information.

The reports follow the introductory material. Each report is formatted similarly. Tables are presented on right hand pages. On the facing, or left hand page, text describing the table appears. Below the text is a figure displaying statewide data. Some reports (the Function Summary, Indicator Summary and Record Documentation Summary) contain a graph showing the distribution of group performance data on the left hand page instead of a figure.

The clinical item report is the most detailed and specific of the reports. It contains 44 tables, one for each clinical item. The first column of the report shows the criteria used to evaluate performance for each clinical item. The next column displays the physician's average performance rates for each criterion and the third column provides peer group (specialty) performance data. The recipient can compare his or her rates to that of his or her peers.

The indicator summary report presents aggregate data. It includes six tables, one for each function, showing the physician's average performance rates for each indicator for a particular function, peer group (specialty) performance data and a measure showing how the individual's performance ranks within that of the peer group. The measure divides a specialty's distribution of rates on an indicator into four equal parts. A rank of 1 means the performance rate fell between the 1st and 24th percentile, inclusive. A rank of 2 means the performance rate fell between the 25th and 49th percentile, inclusive, etc. The higher the rank (e.g., 3 or 4), the better the performance, based on DEMPAQ criteria.

The function summary and record documentation tables show the physician's average performance rates for each function, peer group (specialty) performance data, and a quartile rank.

Report books for nonparticipant workshop attendees omitted the column with individual results from all tables and showed only the specialty group information.

Appendix 1 shows a complete report book for an individual.

Usefulness of the Records Reports

The format of the workshops in each state did not lend itself to a "records worksheet" along the lines of the worksheet prepared for the claims session. Thus, we do not have data from workshop attendees about the face validity of the records measures or about the attendee's comprehension of the reports.

We do have data from the workshop attendees on the usefulness of the records reports. The last portion of the CME workshop held in Alabama and Iowa was set aside to allow the attendees to peruse their own reports. During this time, they were asked to complete evaluation questionnaires about the reports. For each type of report the physicians were asked to consider:

Are the data informative?	❖ Do they provide new information? ❖ Confirm something suspected but not previously verified?
Is the finding provocative?	❖ Does it encourage you to discuss the finding with colleagues? ❖ Look further in literature? ❖ Examine your own records?
Is the finding believable?	❖ Can you trust the data? ❖ Do the data represent a true finding or are there too many other explanations for the number?

These questions assessed the likely usefulness of the data to practicing physicians. Tables 1 through 5 show the results of the evaluation.

Table One
General Evaluation of Record Reports

	N	Percent agreeing or strongly agreeing
I found the introductory sections easy to understand.	24	63%
I found the tables easy to understand.	25	40%
I found the facing (left-hand) page text easy to understand.	25	76%
I found the tables informative.	25	72%
I found the data presented in the tables provocative.	25	52%
I found data believable.	25	56%

Table Two
Clinical Item Report Evaluation

	N	Percent agreeing or strongly agreeing
There were too many tables in the clinical item section of the report.	24	21%
I found the clinical item tables easy to understand.	25	56%
I found the clinical item tables informative.	25	72%
I found the clinical item tables provocative.	24	46%
I found the graphs on the facing pages interesting and helpful.	25	48%
I found the data believable.	38	56%

Table Three
Indicator summary Report

	N	Percent agreeing or strongly agreeing
I found the indicator summary tables easy to understand.	23	70%
I found the indicator summary tables informative.	24	54%
I found the indicator summary tables provocative.	24	54%
I found the charts on the facing pages interesting and helpful.	24	54%
I found the data believable.	23	52%

Table Four
Function summary Report

	N	Percent agreeing or strongly agreeing
I found the function summary table easy to understand.	22	64%
I found the function summary table informative.	22	55%
I found the function summary table provocative.	22	45%
I found the charts on the facing page interesting and helpful.	23	48%
I found the data believable.	22	45%

Table Five
Record documentation Report

	N	Percent agreeing or strongly agreeing
I found the record documentation table easy to understand.	22	64%
I found the record documentation table informative.	22	41%
I found the record documentation table provocative.	22	36%
I found the charts on the facing page interesting and helpful.	23	43%
I found the data believable.	22	45%

Overall:

- ❖ Although only 40% of the physicians reported the tables were easy to understand when asked for their overall assessment, 56% to 70% of the physicians found the tables easy to understand when asked about specific types of tables, e.g., indicator summary or clinical item.
- ❖ Despite the large number of tables, physicians did not describe the clinical item report as containing too many tables (only 21% of the physicians said there were too many).
- ❖ The clinical item report was the most informative (72% vs. 54% for the indicator report and 55% for the function summary report).
- ❖ The record documentation report was viewed as the least informative (41%).
- ❖ Many physicians added comments to their questionnaires. They found the "your rates" column the most interesting part of each report. The distribution graphs for the summary reports also generated much favorable comment.

Summary and Recommendations

We succeeded in designing an informative and relatively easy to understand report format. The clinical item report, although long, generated positive feedback from the physicians. The summary reports were, surprisingly, evaluated as easy to understand. Either the concept of summary measures is relatively easy to grasp, or the organization of the book (clinical item detail first), enhanced understanding of the summary information.

Based on the feedback from physicians we recommend the following for future report books to be used in a one-day workshop:

- ❖ Focus the report books on a single condition or topic, e.g., diabetes or antibiotics. Physicians in each state felt overwhelmed by the amount of information handed them. The number of tables must be divided into manageable segments.
- ❖ Present clinically detailed data first, followed by summary information. Physicians can quickly identify potential areas for improvement when presented with results at a detailed and actionable level, e.g., rate of performance of HgbA1C for patients on insulin.
- ❖ Employ more distribution histograms. Summary measures such as drug and diagnosis monitoring and test response lend themselves to distribution charts. More workshop attendees verbalized positive responses to their distribution charts than is evident from the evaluation results. Those who grasped the concept of a distribution histogram responded well to identifying where they stood in relation to their peers.

Appendix 1

Please Note: Individual physician performance rates for some of the clinical items will be blank in the following report. This signifies that there were no patients with these clinical items for this specific physician.

Reports from
DEMPAQ
Medical Record Review

TABLE OF CONTENTS

I. Introduction
    Structure of DEMPAQ Review
    How the Data Were Collected and Scored
    Types of Reports in This Book
    Glossary of Frequently Used Terms

II. Clinical Item Reports

III. Indicator Summary Report

IV. Function Summary Report

V. Record Documentation Report

APPENDIX A. DEMPAQ Clinical Items

APPENDIX B. DEMPAQ Functions and Indicators

PREFACE

The tables in this book are unique to your practice. They have been produced from the data abstracted from the medical records you submitted for the DEMPAQ project.

The tables in this book also show a summary of the data for physicians in your specialty. With these data, you can compare your performance with that of your peers.

The tables presented on the following pages display performance data in several different ways to help you answer questions about your Medicare-aged patients such as:

- **How do I manage the most prevalent diagnoses, tests, and drugs encountered in the over-65 population?**
- **For which clinical activities do my practices differ from those of my colleagues?**
- **Are patients with important preventive and follow-up care needs "slipping through the cracks?"**
- **Is my record documentation adequate to ensure continuity of care for my patients and to support risk management considerations?**

GOALS OF THE DEMPAQ PROJECT

The DEMPAQ project is a three year cooperative demonstration project funded by the Health Care Financing Administration to enhance the quality of care given to Medicare beneficiaries in physician offices. The project was implemented in three states: Maryland, Alabama, and Iowa. The goals of the project include:

- Developing tools to assess the quality of ambulatory care;
- Using the tools to identify possible areas for improvement;
- Evaluating the reliability, validity, and usefulness of the tools; and
- Devising and testing methods to feedback information about performance to practicing physicians.

This book presents the results of a review of the medical records you submitted in the fall of 1991. The review covered a two year window:

July 1, 1989 through June 30, 1991

STRUCTURE OF THE DEMPAQ REVIEW

The DEMPAQ record review takes an in-depth look at patterns of care given to elderly Medicare patients in physicians' offices. The framework of the record review system follows.

Functions

FUNCTIONS are clinical activities that are commonly performed in the course of an office visit. In this report, we review the following functions:

- Making a DIAGNOSIS
- Prescribing and monitoring a DRUG
- Responding to an abnormal TEST
- Ordering or performing a PROCEDURE
- Performing PREVENTIVE or SCREENING services
- FOLLOW-UP of serious health threats
- DOCUMENTING in the medical record.

Clinical Items

A CLINICAL ITEM is a specific drug (e.g. ACE inhibitor), diagnosis (e.g. diabetes mellitus), test or procedure. The drugs we selected to review for the Drug function are commonly prescribed for the elderly population. Likewise, the diagnoses we selected for the Diagnosis function represent prevalent conditions among the elderly and account for significant morbidity. Appendix A displays the clinical items reviewed.

Indicators (Rates of performance of specific actions)

INDICATORS, (also known as performance rates) measure key actions associated with a function. For example, the indicators we selected for the Diagnosis function include:

- Monitoring a pre-existing diagnosis
- Making a new diagnosis
- Searching for treatable causes or co-morbidities of a diagnosis.

These actions represent important aspects of the clinical processes that lead to patient outcomes. For each action, we measure the rate at which it is performed for relevant patients. The DEMPAQ indicators are shown in Appendix B.

Criteria

Unique review criteria have been developed for each clinical item/indicator combination (see figure one). The criteria express the specific clinical details which represent appropriate performance of an indicator. Of course, the actions which represent appropriate monitoring for a pre-existing diagnosis of diabetes differ from the appropriate monitoring actions for ischemic heart disease (see figure two).

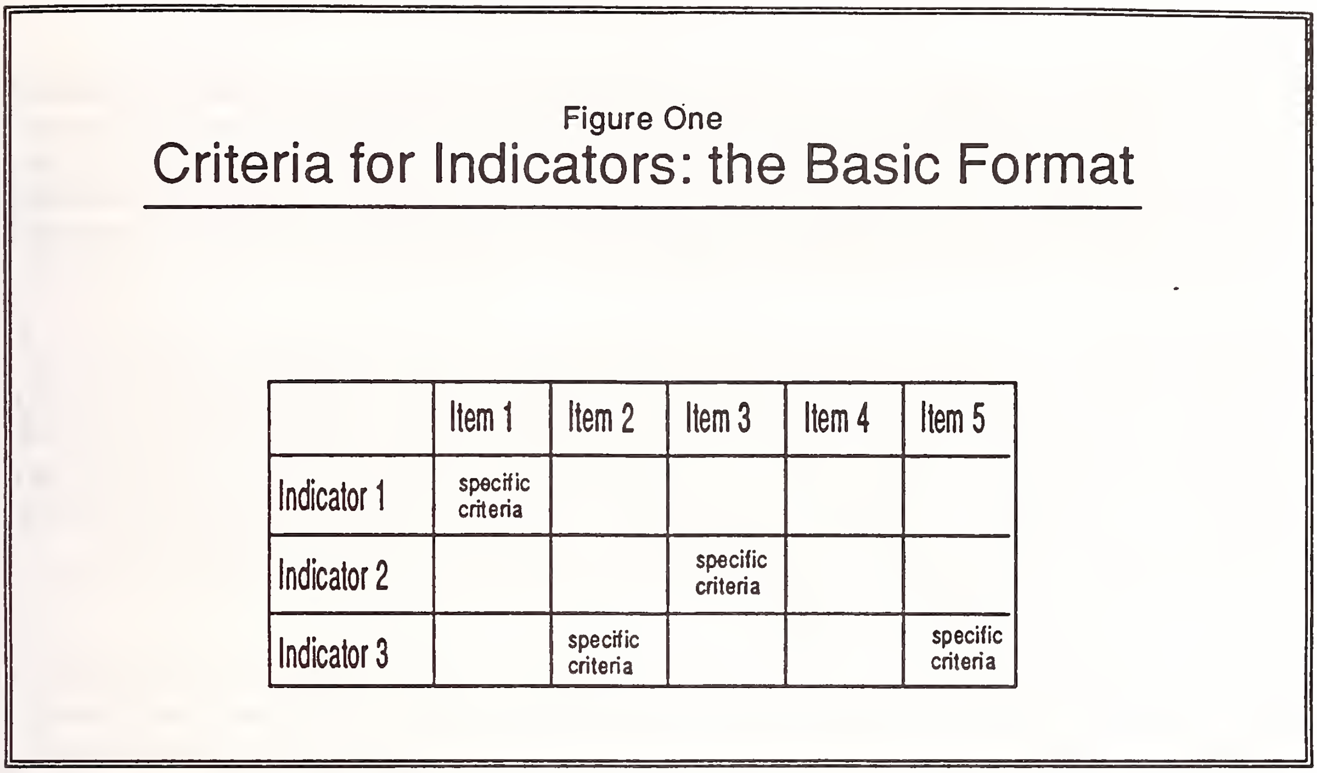

Figure One

Criteria for Indicators: the Basic Format

	Item 1	Item 2	Item 3	Item 4	Item 5
Indicator 1	specific criteria				
Indicator 2			specific criteria		
Indicator 3		specific criteria			specific criteria

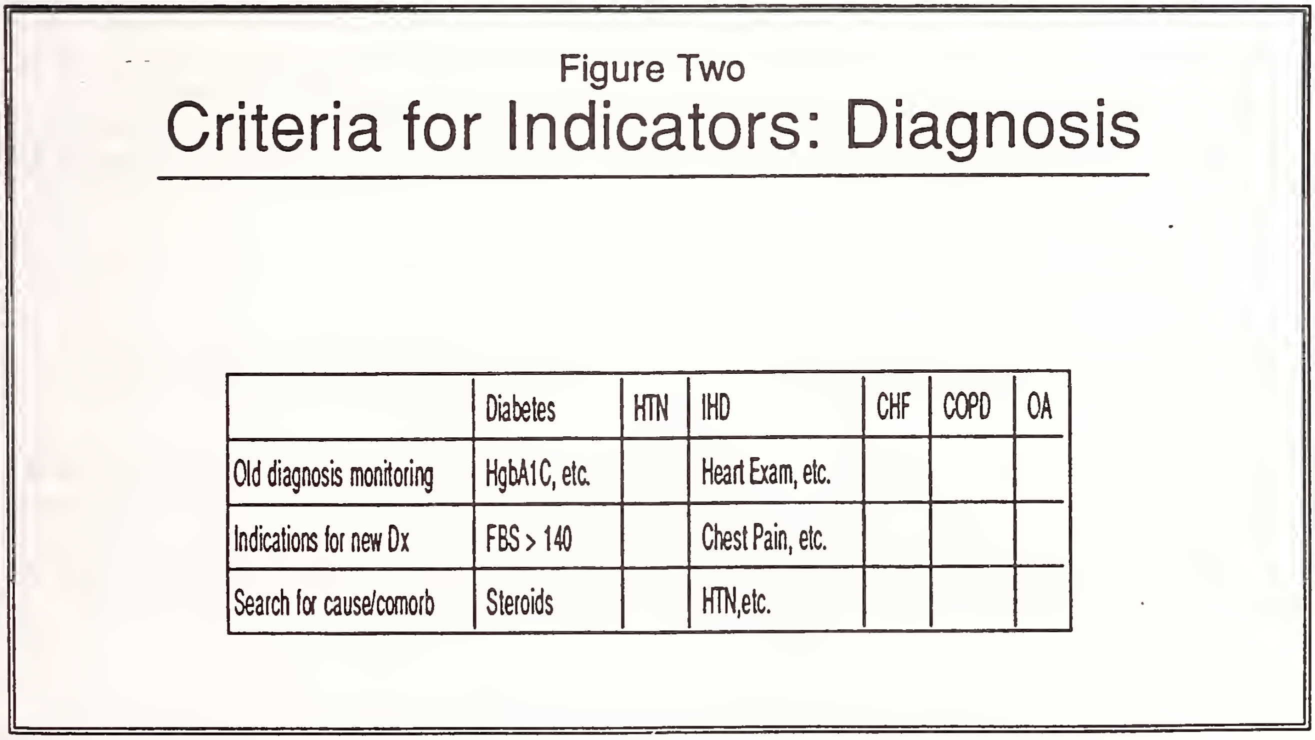

Figure Two

Criteria for Indicators: Diagnosis

	Diabetes	HTN	IHD	CHF	COPD	OA
Old diagnosis monitoring	HgbA1C, etc.		Heart Exam, etc.			
Indications for new Dx	FBS > 140		Chest Pain, etc.			
Search for cause/comorb	Steroids		HTN,etc.			

HOW THE DATA WERE COLLECTED AND SCORED

Sample

You were invited to participate in the DEMPAQ project because your name was randomly chosen from a list of all primary care physicians who provided services to Medicare patients in Maryland. The list was generated from Medicare claims data. With the letter of invitation, we included a listing of 25 of your Medicare patients. Like you, the patients had been randomly selected. We asked for photocopied records of these 25 patients for a two year window: July 1, 1989 through June 30, 1991. The charts were mailed to the Delmarva Foundation for Medical Care (DFMC) for review.

DQRS Review

The review was accomplished with a computerized record review system, developed specially for the DEMPAQ project, called DQRS (or "DEMPAQ Quality Review System"). Review criteria were stored in special data dictionaries and called into the computer program as needed. These review criteria were developed with advice and comments from the major primary care medical societies in each of the three study states. In Maryland, the groups were the Medical-Chirurgical Faculty of Maryland, the Maryland Society of Internal Medicine, and the Maryland Association of Family Physicians. Criteria were originally derived from guidelines and standard medical texts, but were revised in several cycles of review by the above mentioned physicians.

Reviewers at the PRO abstracted charts over a five month period. A five percent random sample of charts were re-reviewed by a second reviewer to make sure the abstraction rules were being followed consistently. In addition, approximately 400 records were reviewed by physicians using a structured peer review form to determine whether the review criteria were relevant and useful for assessing the of quality of care in a particular case.

Scoring

After the completion of the review, each finding is assigned one of five scores: met, acceptable alternative, not applicable, not reviewable, and flag[1]. These terms are defined in the glossary. A special computer program then calculates the acceptable performance rate on each item, indicator and function. The formula for percent acceptable performance is

$$\%\ \text{acceptable performance} = \frac{(\text{Met} + \text{AA})}{(\text{Met} + \text{AA} + \text{Flag})}$$

Summary rates are first calculated at the patient level and then averaged across all patients. This ensures that no single patients will unduly influence the summary rate.

The record documentation function is scored differently. The reviewers evaluate the quality of record documentation on a four point scale: 0 = no documentation, 1 = illegible documentation, 2 = minimal documentation, and 3 = adequate documentation. Data are then averaged across patients to create a summary score describing a physician's average level of documentation. Scores close to zero indicate poor documentation, while scores close to 3 indicate adequate documentation.

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[1] Met: meets the criterion exactly; acceptable alternative: did not meet the criterion for a set of pre-defined reasons, e.g. patient refusal; not applicable: the criterion does not apply to this case; not reviewable: the time frame for records data was insufficient to review this item for this case; flag: the case did not meet the criterion, nor any of the categories above.

TYPES OF REPORTS INCLUDED

This book includes four different types of reports, as listed below. We start with the specific (clinical item) and move to the summaries (indicator and function). Each report is formatted similarly. Tables are presented on right hand pages. On the facing, or left hand page, text describing the table appears. Below the text is a figure displaying statewide data. Some reports (the Function Summary, Indicator Summary and Record Documentation Summary) also contain additional graphic displays of group performance data on the left hand page.

I. **Clinical Item Report** - 65 tables, one for each clinical item, showing:
  - criteria used to evaluate performance for each clinical item;
  - your average performance rates for each criterion; and
  - peer group (specialty) performance data.

II. **Indicator Summary** - six tables, one for each function, showing:
  - your average performance rates for each indicator for that function;
  - peer group (specialty) performance data; and
  - a measure comparing your performance to that of your peer group,

III. **Function Summary** - one table showing:
  - your average performance rates for each function;
  - peer group (specialty) performance data; and
  - a measure comparing your performance to that of your peer group,

IV. **Record Documentation Summary**[2] - one table showing:
  - your average performance on six measures of documentation;
  - peer group (specialty) performance data; and
  - a measure comparing your performance to that of your peer group,

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[2] The record documentation results are presented separately because the data were scored differently from the data for the other functions (see "How the Data Were Collected and Scored", p. O-4).

GLOSSARY

The following terms will be used on the report tables and throughout the accompanying text:

Acceptable alternative (AA). Score category: a pre-defined reason why a recommended action could not or should not have been done.

Acceptable performance. A criterion is either met or the medical record shows an acceptable alternative.

Clinical item. A specific diagnosis (eg. diabetes mellitus), test, procedure, or drug type (eg. ACE inhibitors) representative of the functions reviewed. Items were selected on the basis of their prevalence in the Medicare population. Appendix A contains a complete list of items reviewed.

Criterion. The specific actions or clinical findings which define recommended care for a given clinical item on a particular indicator.

DEMPAQ. DEMPAQ stands for Developing and Evaluating Methods to Promote Ambulatory Care Quality.

Flag. Score category: a criterion appears not to be met.

Function. An activity performed by clinicians in caring for patients; the functions reviewed by DRS are making and monitoring a DIAGNOSIS, responding to an abnormal TEST value, prescribing and monitoring a DRUG, performing a PROCEDURE, FOLLOW-UP of serious health threats, rendering PREVENTIVE or screening services, and DOCUMENTATION of the medical record,

Indicator. A rate for the performance of key tasks or processes which influence patient outcomes. For example: the rate of appropriate MONITORING an old diagnosis, the rate of prescribing a drug without CONTRAINDICATIONS, and the rate of performing procedures only if there are appropriate INDICATIONS.

Met. Score category: the medical record shows compliance with a given criterion.

New diagnosis or drug. A diagnosis which is newly made, or a drug which is newly prescribed ***during*** the two year review period.

Not applicable. Score category: a criterion is not applicable to the specific case being reviewed.

Not reviewable. Score category: a case cannot be scored because the medical record does not contain the entire time frame specified by the criterion.

Peer group. Physicians in your state in your specialty group.

Performance rate. The percent of cases where the medical record shows compliance or acceptable alternative for an indicator.

Pre-existing diagnosis or drug. A diagnosis which was made or a drug which was prescribed ***prior*** to the beginning of the two year review period.

Quartile rank. The ranking of your performance rate, where a percentile distribution of rates has been divided into four equal parts. The higher the rank (e.g., 3 or 4), the better the performance.

- A rank of 1 means your performance rate fell between the 0th and 24th percentile, inclusive
- A rank of 2 means your performance rate fell between the 25th and 49th percentile, inclusive
- A rank of 3 means your performance rate fell between the 50th and 74th percentile, inclusive
- A rank of 4 means your performance rate fell between the 75th and 99th percentile, inclusive.

Score. A way of categorizing the findings of the review. Possible scores are MET, ACCEPTABLE ALTERNATIVE (AA), and FLAG; cases considered NOT APPLICABLE and NOT REVIEWABLE receive scores of 'NA' or 'NR.'

CLINICAL ITEM REPORTS

June 30, 1993

CLINICAL ITEM REPORTS

The Clinical Item Reports present one table for each clinical item on the right-hand page and a graph on the left-hand page. The table contains data unique to your practice and for your peer group; the graph displays statewide information. The tables are grouped clinically, e.g. all the tables related to diabetes care are grouped together: diabetes diagnosis, insulin, oral hypoglycemic drugs, blood glucose test, and urinalysis dipstick

1. How to read the Clinical Item report

The function reviewed is shown in the title. The dates covered by the review appear immediately below the title. The clinical item name appears above the table, on the right; the item code, (used by the DEMPAQ self-assessment workbook) at the left. The placement of the clinical item name, on the outside edge of the table, makes it easy to find the table when flipping through the book.

Your study number appears below the review dates, along with your peer group designation. Your peer group was determined from the specialty code on the Medicare carrier provider file. If general practice was listed as your specialty on the provider file, you were assigned to the general practice peer group.

The following describes how to read the clinical item table.

COLUMN	DESCRIPTION
Indicator	Displays the indicators associated with the function (Drugs, Tests, etc.) listed in the title for this page.
Criterion	Presents the criteria used to construct the indicator. The criteria are unique to the clinical item shown in the top right hand corner, just above the table.
Your Rates: Number of Patients	Shows the number of patients who were included in the rate displayed in the next column. A clinical item is evaluated only once per patient. For example, if a patient has multiple abnormal creatinine values in the record, only the first found in the records you sent triggers review.
Your Rates: Percent Acceptable Performance	Displays the "percent acceptable performance" rate on a criterion. Performance is acceptable when a criterion is met or the medical record shows an acceptable alternative (see GLOSSARY for definitions). See below for information on how the rates were calculated.
Peer Group Rates: Average Number of Patients	Shows the average number of patients ***per physician*** included in the rate shown in the next column.
Peer Group Rates: Average Percent Acceptable Performance	Presents the average percent acceptable performance rate for all physicians in your peer group. See below for information on how the rates were calculated.

2. How to interpret the Clinical Item Reports

These tables will give you an idea of how often you perform selected activities for your patients 65 and older. The average rates of physicians within your specialty who submitted records for DEMPAQ review are given so you can compare your performance to your peers. **Caution:** The number of cases in these tables tends to be small, so your rates may not be representative of your customary performance.

3. Calculating the Clinical Item Rates

Figure one below shows how the acceptable performance scores (MET and AA) for each patient are added together and divided by the total number of scores for a doctor (MET + AA + FLAG) to give a performance rate for each criterion (see rows 1 and 3, below). A physician's monitoring rate is calculated by averaging individual patient monitoring scores (see row 3, below).

Figure One

Calculating Rates for a Clinical Item

Diabetes Diagnosis

	Patnt 1	Patnt 2	Patnt 3	Patnt 4	Patnt 5	Rate*
If on Steroids, review	NA	NA	Met	Flag	Flag	1/3=33%
Bl. glu > 250 with symps, etc.	NA	NA	Met	Met	Flag	2/3=67%
Overall Dx Monitor	75%	38%	NA	NA	NA	(75+38)/2=57%

*Rate=(Met+AA)/(Met+AA+Flag)
*Rate=Met,AA=1
*Rate=Flag+0

Each monitoring rate may be derived from up to eight individual monitoring scores. Overall monitoring rates are the percentage of monitoring criteria with met or acceptable alternative findings. In the example below, patient number one has 6 met or AA scores on the individual criteria, one flag score and one score which is not included in either the numerator or the denominator. Thus, the overall monitoring rate for patient one is 86%.

Figure Two

Calculating Rates for Monitoring

Diabetes Diagnosis

	Patient 1	Patient 2	Rate*
Overall Dx Monitor Rate	6/7=86%	3/8=38%	(75+38)/2=57%
Comment control	Met	Flag	1/2 = 50%
Wt, pulse, BP	Met	Met	2/2 = 100%
HgbA1C	Flag	Flag	0/2 = 0%
U/A Dipstick	Met	Met	2/2 = 100%
Blood Glucose	AA	Met	2/2 = 100%
Diet Comply	AA	Flag	1/2 = 50%
Heart, leg, foot exam	Met	Flag	1/2 = 50%
Fundoscopy	NR	Flag	1/2 = 50%

*For Criteria: Rate=(Met+AA)/(Met+AA+Flag)
*For Overall: Rate= average of overall rates
*Met,AA = 1: Flag= 0

4. **Calculating peer group rates**

Peer group rates are constructed by averaging individual physician performance rates, by specialty. Only physicians who submitted records for the DEMPAQ review are included in the peer group rate.

5. What is NOT included in these tables

Several clinical items have been excluded from this report, although data were collected for them. These clinical items appear in the DEMPAQ workbook. The items were excluded for one of two reasons: either there were too few cases to report (less than 30 in the entire state) or problems with the criteria and abstracting instructions lead to unusable results. Excluded items include:

- Adrenergic neuron blockers
- Direct acting vasodilators
- Potassium sparing diuretics
- Alpha blocker + thiazide
- Beta blocker + thiazide
- Centrally acting + thiazide
- Antiadrenergic + Thiazide+ Vasodilator
- Vasodilator + thiazide
- Antiadrenergic + vasodilator
- Corticosteroids
- Salicylate
- NSAIDs
- Oral beta-adrenergic + xanthine
- Penicillin
- Antipseudomonal penicillin
- Sulfonamide
- ESR test
- Blood gases
- Joint X-ray
- Rheumatoid arthritis
- Flexible Sigmoidoscopy
- Colonoscopy

6. Where to go for more information

The DEMPAQ Self-Assessment Workbook contains the full text for each of the criteria shown on these tables with references to the medical texts and guidelines from which the criteria were derived. If you wish more information about why a particular criterion was selected, the Workbook will supply that information.

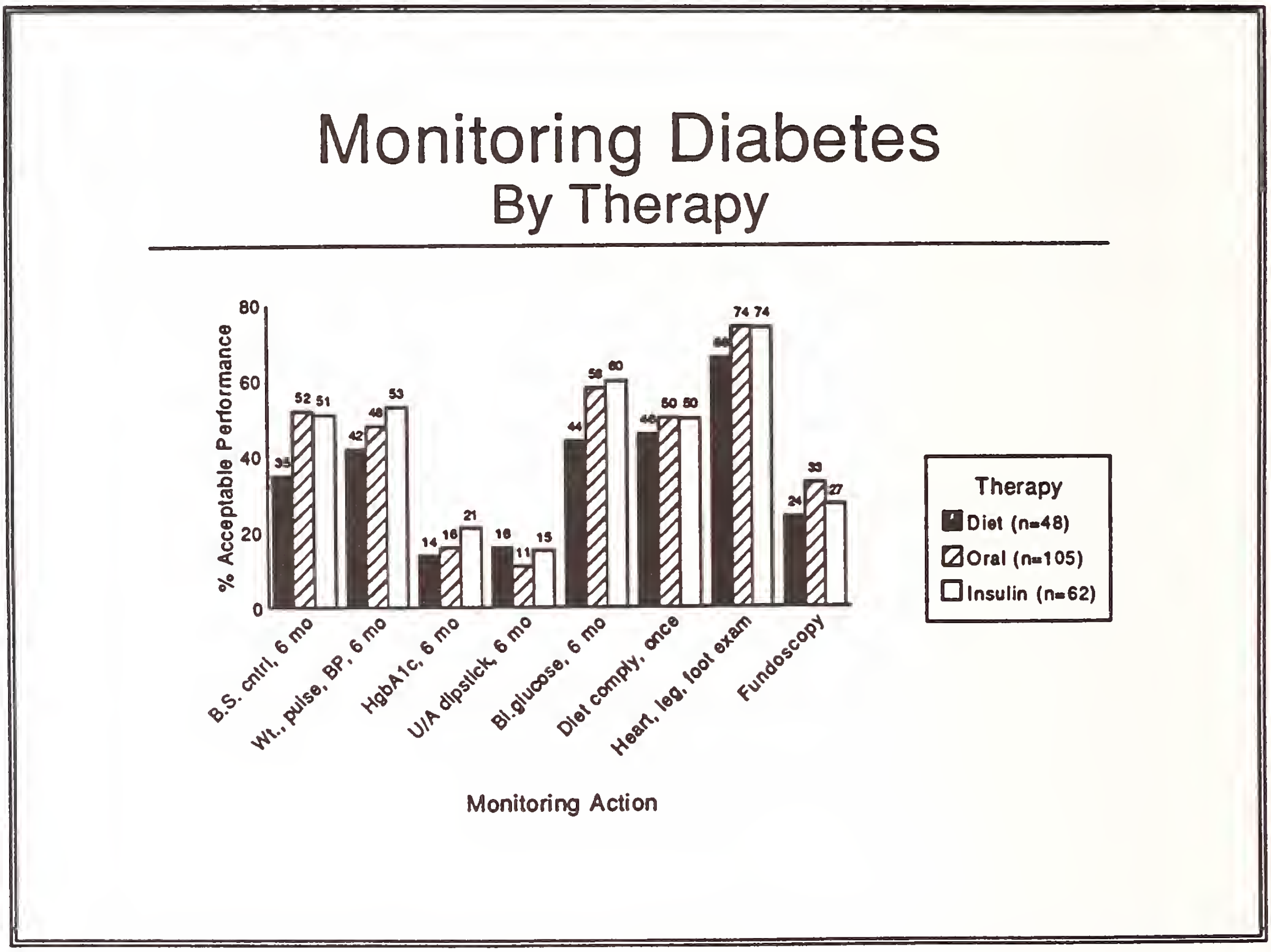
The tables in the next two sections, the Indicator Summary and Function Summary reports, provide aggregate information about performance.

DIABETES

DIABETES

The table on the opposite page displays the results of the review of your diabetic patients' charts with comparisons to your specialty. The three diagnosis indicators are shown in the far left column. The next column presents the specific criteria used to evaluate the quality of care. The full text of the criteria with medical references is given in the DEMPAQ Self-Assessment Workbook. The remaining columns show your performance rates on the diabetes criteria compared to your specialty group rates.

The figure below shows old diagnosis monitoring by three different types of therapy for the entire state of Maryland.



CLINICAL ITEM REPORT - Diagnosis
Review Period: July 1, 1989 - June 30, 1991

ID Number:
Peer Group: General Practice

CODE: 05 **DIABETES**

Indicator	Criterion	Your Rates		Peer Group Rates	
		Number of Patients	Percent Acceptable Performance	Average Number of Patients per Physician	Average Percent Acceptable Performance
Old Diagnosis Monitoring	Overall Score	2	50%	3.1	37%
	Comment on bl. glucose control - q. 6 mos	2	50%	3.0	42%
	Weight, pulse, BP - q. 6 mos	2	100%	3.0	44%
	HgbA1C or fructosamine - q. 6 mos	2	0%	3.0	5%
	Urinalysis dipstick for protein and microscopic exam of sediment - q. 6 mos	2	0%	3.0	7%
	Bl. glucose - q. 6 mos	2	50%	3.0	39%
	Document dietary compliance - once	2	50%	3.1	39%
	Heart exam, leg and foot exam - once	2	100%	3.1	55%
	Fundoscopy - once	2	0%	3.1	30%
Evidence for a New Diagnosis	Bl. glucose >250 with symptoms of DM OR two FBS >140 OR bl. glucose levels during GTT >250 at 2 hrs and some point between 0 and 2 hrs	0	%	0.3	40%
Search for Treatable Causes	If on steroids, possible potentiating role reviewed	0	%	0.2	0%

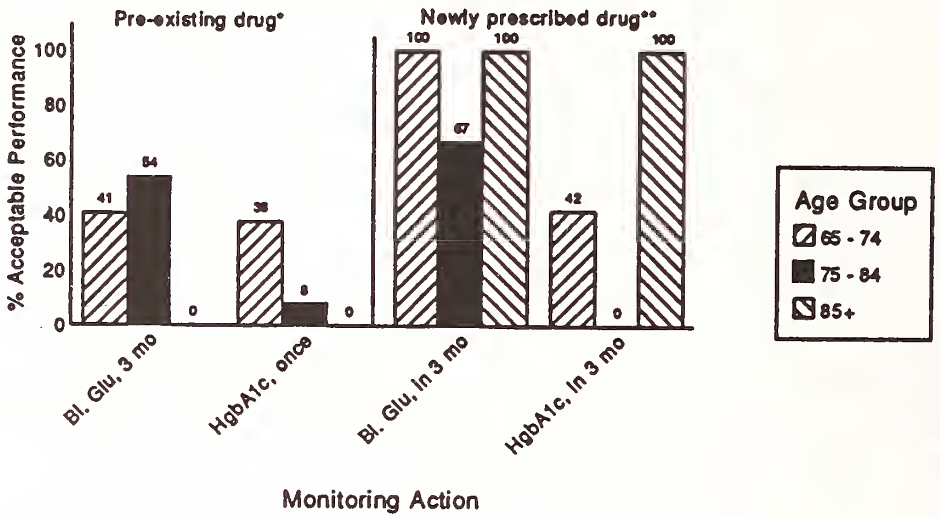
INSULIN

The table on the opposite page displays the results of the review of those patients on insulin, with comparison to your specialty. The five drug indicators are shown in the far left column. The next column presents the specific criteria used to evaluate the quality of care. The full text of the criteria with medical references is given in the DEMPAQ Self-Assessment Workbook. The full text of the criteria with medical references is given in the DEMPAQ Self-Assessment workbook. The remaining columns show your performance rates on the insulin criteria compared to your specialty group rates.

The figure below presents statewide data for patients taking insulin.

Insulin Monitoring

By Age Group



* Pre-existing drugs: n=36 (65-74), n=13 (75-84), n=2 (85+)

** Newly prescribed drugs: n=7 (65-74), n=3 (75-84), n=1 (85+)

Drugs within this class

Generic	Trade
Regular	Iletin
Regular+Isophane	Mixtard
Regular, human	Humulin
Regular+Isophane	Humulin 70/30, Mixtard 70/30, Novolin 70/30
Isophane (NPH)	NPH Iletin
Isophane, human	Humulin N
Zinc	Lente Iletin
Zinc, human	Humulin L, Novolin L
Extended Zinc	Ultralente Iletin
Extended Zinc, human	Humulin U Ultralente
Prompt Zinc	Semilente Iletin
Protamine Zinc	Protamine Zinc & Iletin

CLINICAL ITEM REPORT - Drugs

Review Period: July 1, 1989 - June 30, 1991

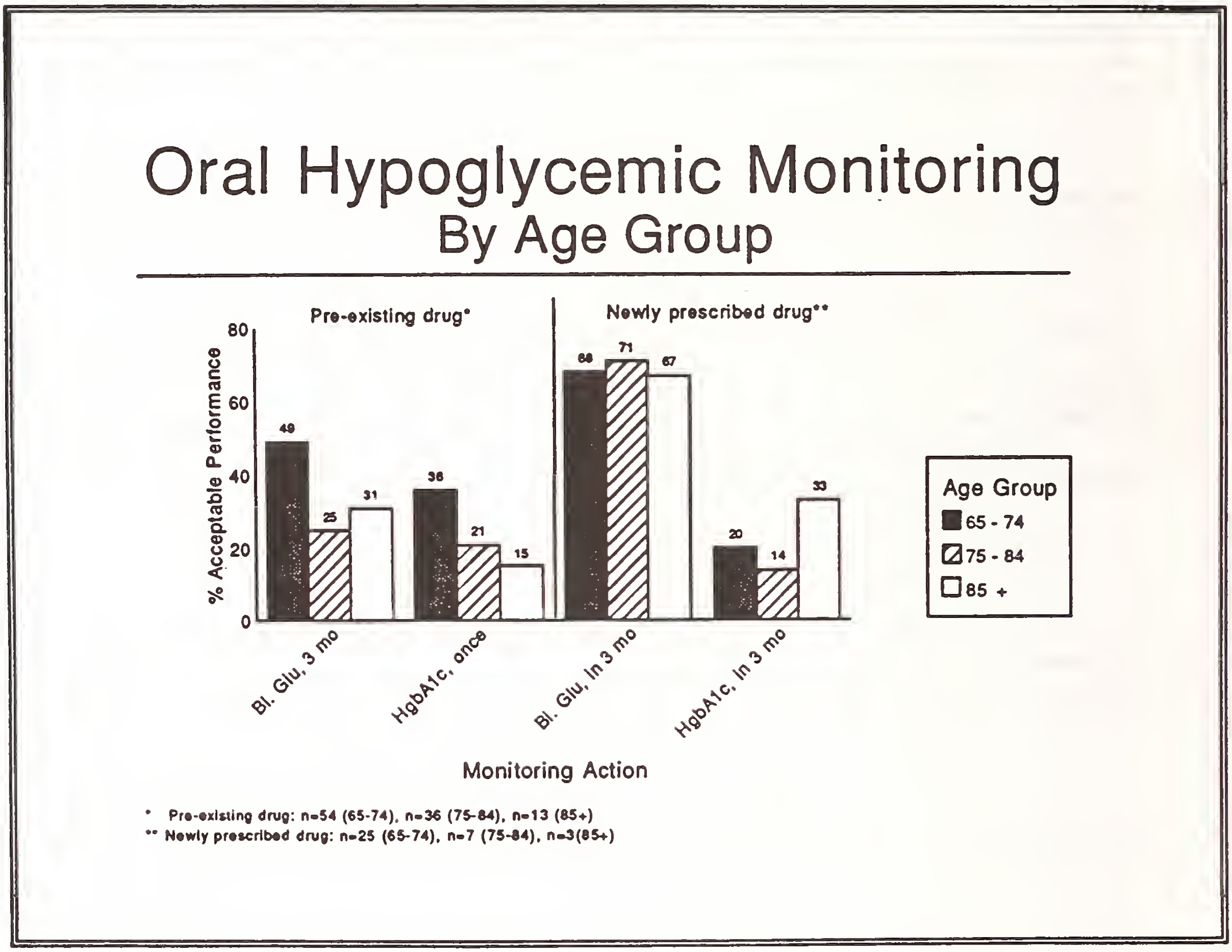
ID Number:
Peer Group: General Practice

CODE: 31 **INSULIN**

		Your Rates		Peer Group Rates	
Indicator	**Criterion**	**Number of Patients**	**Percent Acceptable Performance**	**Average Number of Patients per Physician**	**Average Percent Acceptable Performance**
Dose and Frequency	Both dose and frequency documented	3	100%	1.5	93%
	Dose Documented	3	100%	1.5	100%
	Frequency Documented	3	100%	1.5	93%
Drug Indications	Drug prescribed appropriately for: Insulin-dependent/non-insulin-dependent DM	0	%	0.3	100%
Condition Contraindications	NA				
Drug Contraindications	No contraindications or use of drug justified despite contraindications: **Absolute:** None **Risk/benefit:** Fenfluramin, long-term high-dose corticosteroid therapy, beta blockers	3	100%	1.5	86%
Drug Monitoring	Overall Monitoring Score	3	33%	1.5	58%
	Old Drugs:				
	Blood glucose - q. 3 mos	3	33%	1.1	41%
	HgbA1C or fructosamine - once	3	0%	1.2	21%
	New Drugs:				
	Blood glucose - within 3 mos start of therapy	0	%	0.2	67%
	HgbA1C or fructosamine - within 3 mos start of therapy	0	%	0.2	33%
	If on beta blocker, educate re hypoglycemia.	0	%	0.1	50%

The table on the opposite page displays the results of the review of those patients on oral hypoglycemic drugs, with comparison to your specialty. The five drug indicators are displayed in the far left column. The next column presents the specific criteria used to evaluate the quality of care. The full text of the criteria with medical references is given in the DEMPAQ Self-Assessment Workbook. The remaining columns show your performance rates on the criteria compared to your specialty group rates.

The figure below presents statewide data for patients taking oral hypoglycemic drugs.



* Pre-existing drug: n=54 (65-74), n=36 (75-84), n=13 (85+)
** Newly prescribed drug: n=25 (65-74), n=7 (75-84), n=3(85+)

Drugs within this class

Generic	**Trade**
Acetohexamide	Dymelor
Chlorpropamid	Diabinese, Glucamide
Glipizide	Glucotrol
Glyburide	Diabeta, Micronase
Tolazamide	Tolamide, Tolinase
Tolbutamide	Oramide,Orinase

CLINICAL ITEM REPORT - Drugs
Review Period: July 1, 1989 - June 30, 1991

ID Number:
Peer Group: General Practice

CODE: 32 **ORAL HYPOGLYCEMIC**

Indicator	Criterion	Your Rates		Peer Group Rates	
		Number of Patients	Percent Acceptable Performance	Average Number of Patients per Physician	Average Percent Acceptable Performance
Dose and Frequency	Both dose and frequency documented	1	100%	2.7	86%
	Dose Documented	1	100%	2.7	90%
	Frequency Documented	1	100%	2.7	86%
Drug Indications	Drug prescribed appropriately for: DM, non-insulin-dependent or diabetes insipidus, partial central	1	0%	0.9	89%
Condition Contraindications	No contraindications or use of drug justified despite contraindications: **Absolute:** None **Risk/benefit:** Patient >65 (chlorpropamide), renal impairment (glyburide)	1	100%	2.7	96%
Drug Contraindications	No contraindications or use of drug justified despite contraindications: **Absolute:** Beta blockers, insulin **Risk/benefit:** Phenytoin, long-term high-dose corticosteroids, anticoagulants, thiazides, calcium channel blockers, long-term high-dose salicylates, captopril	1	0%	2.7	56%
Drug Monitoring	Overall Monitoring Score	1	0%	2.6	53%
	Old Drugs:				
	Blood glucose - q. 3 mos	0	%	1.7	22%
	HgbA1C - once	0	%	1.8	29%
	If on anticoagulants - PT q. 1 mo	0	%	0.0	0%

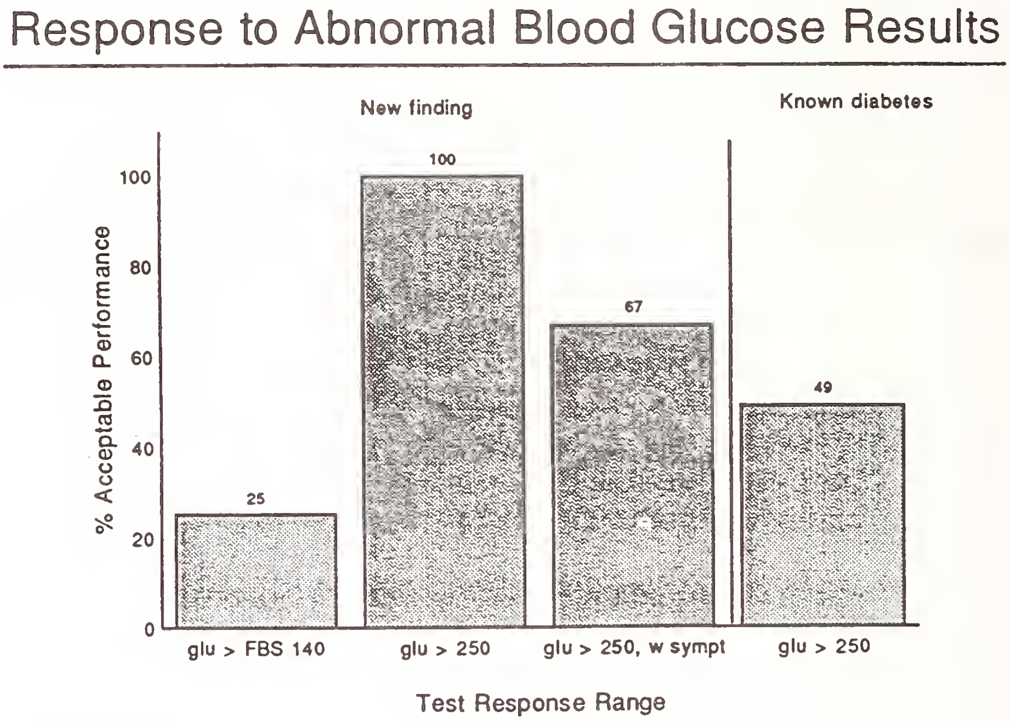
(cont'd)

Indicator	Criterion	Your Rates		Peer Group Rates	
		Number of Patients	Percent Acceptable Performance	Average Number of Patients per Physician	Average Percent Acceptable Performance
	New Drugs:				
	Blood glucose - within 3 mos start of therapy	1	0%	0.9	74%
	HgbA1C - within 3 mos start of therapy	1	0%	0.9	16%
	If on anticoagulants - PT within 1 wk start of therapy	0	%	0.0	%
	If on beta blockers, note in records re education to patient about hypoglycemia	0	%	0.1	0%
	If on chlorpropamide - Na+ within 1 mo start of therapy	0	%	0.0	100%

BLOOD GLUCOSE

The table on the opposite page displays the results of the review of those patients with abnormal blood glucose tests, with comparisons to your specialty. The three test indicators are shown in the far left column. The next column presents the specific criteria used to evaluate the quality of care. The full text of the criteria with medical references is given in the DEMPAQ Self-Assessment Workbook. The remaining columns show your performance rates on the criteria compared to your specialty group rates.

The figure below shows statewide data for patients with abnormal blood glucose tests.



N (from left to right) 12, 3, 3, 105.

CLINICAL ITEM REPORT - Tests
Review Period: July 1, 1989 - June 30, 1991

ID Number:
Peer Group: General Practice

CODE: 05 **GLUCOSE-FASTING AND RANDOM BLOOD LEVELS**

Indicator	Criterion	Your Rates		Peer Group Rates	
		Number of Patients	Percent Acceptable Performance	Average Number of Patients per Physician	Average Percent Acceptable Performance
Test Indications	Tests ordered appropriately for: **Annually if obese, family history of diabetes, or had gestational diabetes:** **Conditions:** Alcoholism, polyuria, polydipsia, polyphagia, wt loss, visual changes, glycosuria, DM, confirm self-monitoring values	2	100%	2.3	81%
Test Urgent Response	Patient referred to hospital or ER for lab values: Glucose >400 with ketonuria and metabolic ketoacidosis **OR** glucose >700 and change in mental status.	0	%	0.0	%
Test Response	Overall score:	2	0%	2.2	32%
	Abnormal test results appropriately followed up: **Not Known to be Diabetic:**				
	Glucose <50: Within 1 wk repeat glucose after 12-hr fast **OR** get plasma insulin.	0	%	0.0	%
	Blood glucose >140 (if known to be fasting): Within 1 mo recheck before diagnosing DM, either with fasting glucose, glucose tol. test, **OR** 2-hr post-prandial test. Perform dipstick urinalysis for glycosuria/ketonuria. Review results within 2 wks.	0	%	0.1	0%
	Glucose >250: Within 3 mos dipstick urinalysis for glycosuria/ketonuria and if ketones positive, perform FBS **OR** bl. glucose at timed relationship to intake and serum electrolytes. Review results in 1 wk. If ketones neg., recheck bl. glucose at a known time interval after intake **OR** perform fasting bl. glucose.	0	%	0.0	%
	Glucose >250 and urine ketones positive: Within 2 days bl. glucose, fasting or at timed relationship to intake and serum electrolytes. Review results within 1 wk.	0	%	0.0	%
	Glucose >250 but symptoms of wt loss, excess fluid intake, excess urine: Within 1 wk diagnose diabetes and start therapy with dietary advice, with or w/o oral hypoglycemic or insulin therapy. Review results within 1 wk.	0	%	0.0	%

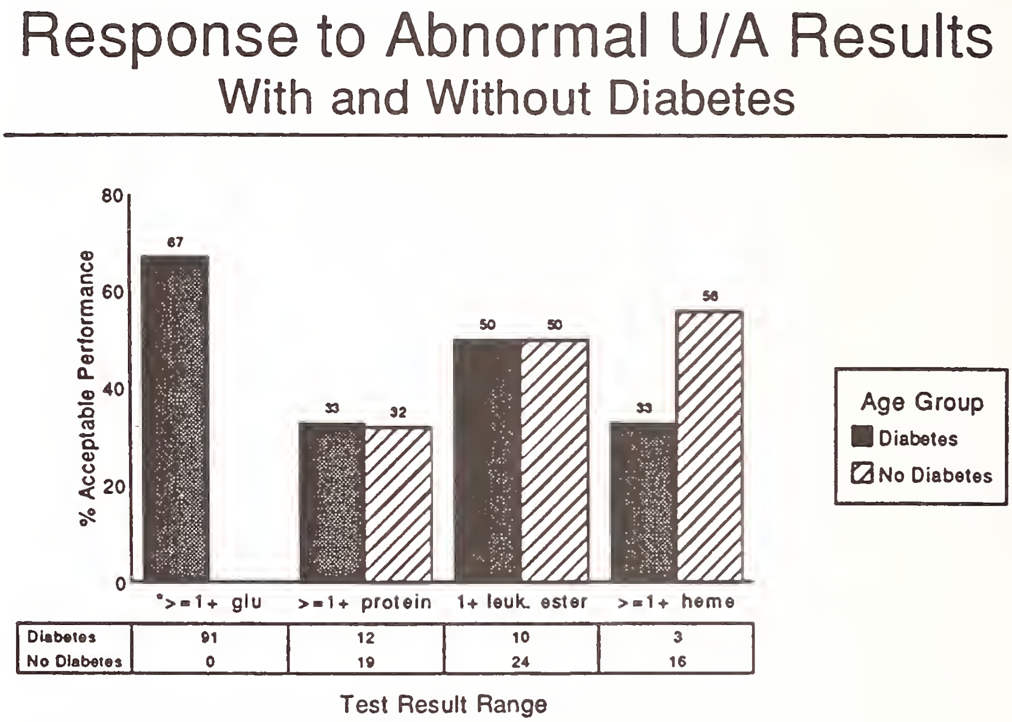
(cont'd)

Indicator	Criterion	Your Rates		Peer Group Rates	
		Number of Patients	Percent Acceptable Performance	Average Number of Patients per Physician	Average Percent Acceptable Performance
	Known to be Diabetic:				
	Glucose <50: Within 2 days ask if symptoms of hypoglycemia; if yes, decr. dose of oral agent (or disc. if low dose) **OR** decr. insulin dose.	0	%	0.0	%
	Bl. glucose >250 (not known to be fasting) or >170 (fasting): Within 1 wk start or incr. dose of oral antidiabetic **OR** start insulin therapy **OR** change insulin regime unless noted why action not performed (e.g., infec., stress, poor dietary compliance).	2	0%	2.1	34%

URINALYSIS

The table on the opposite page displays the results of the review of those patients with abnormal urinalysis tests, with comparisons to your specialty. The three test indicators are shown in the far left column. The next column presents the specific criteria used to evaluate the quality of care. The full text of the criteria with medical references is given in the DEMPAQ Self-Assessment Workbook. The remaining columns show your performance rates on the urinalysis criteria compared to your specialty group rates.

The figure below presents statewide data for patients with abnormal urinalysis tests.



Response to Abnormal U/A Results

With and Without Diabetes

	*>=1+ glu	>=1+ protein	1+ leuk. ester	>=1+ heme
Diabetes	91	12	10	3
No Diabetes	0	19	24	16

*This test range applies only to diabetes.

CLINICAL ITEM REPORT - Tests
Review Period: July 1, 1989 - June 30, 1991

ID Number:
Peer Group: General Practice

Code: 09 **Urine Dipstick**

		Your Rates		Peer Group Rates	
Indicator	**Criterion**	**Number of Patients**	**Percent Acceptable Performance**	**Average Number of Patients per Physician**	**Average Percent Acceptable Performance**
Test Indications	Tests ordered appropriately for: **Conditions: Any Visit:** Suspicion of urinary tract infec., known DM, HTN, trauma, kidney stones, susp. of renal or urinary tract disease, disease that may affect renal func., polyuria, oliguria, on drugs that may affect renal func.	1	100%	1.8	99%
Test Urgent Response	Patient referred to hospital or ER for lab values: 4+ ketones with or w/o glucose (unless on diet or fasting)	0	%	0.0	%
Test Response	Overall score: Abnormal test results appropriately followed up:	1	100%	1.8	49%
	≥3 + urine glucose in diab: Within 1 wk check dietary and med. compl. and change therapy if req. If in nondiabetic, within 1 wk check bl. glucose at timed relationship to food intake, check urine ketones. Review results in 1 mo.	1	100%	0.2	83%
	≥1 + protein, new finding, no known diab: Within 2 wks check urine cult. or leukocyte esterase. If infec., treat appropriately OR if not infec., within 2 wks check early a.m. urine sediment and dipstick and serum creat. If early a.m. proteinuria found, check 24-hr urine for protein. Rev. results in 1 mo.	0	%	0.4	33%
	≥1 + protein, new finding, known diab. or HTN, or drugs that affect kidney func: Within 2 wks check urine cult. and serum creat. If infec., treat with antibiotics. See patient to review results within 1 mo. OR if no infec., within 2 wks check urine sediment, serum creat. See patient to review findings in 2 wks or req. consult or referral.	0	%	0.2	67%
	4 + protein, no DM, repeat urinalysis. Check serum creatinine, quantitative protein or creatinine/protein ration. If > 3g protein in 24 hours or equivalent on spot urine, do urine immunoassay, eletrophoresis, and review results within 1 month OR request consultation OR referral.	0	%	0.1	0%

(cont'd)

CODE: 09 URINE DIPSTICK FOR GLUCOSE, KETONES, PROTEIN, BLOOD, AND LEUKOCYTE ESTERASE(MARKER OF WBC)

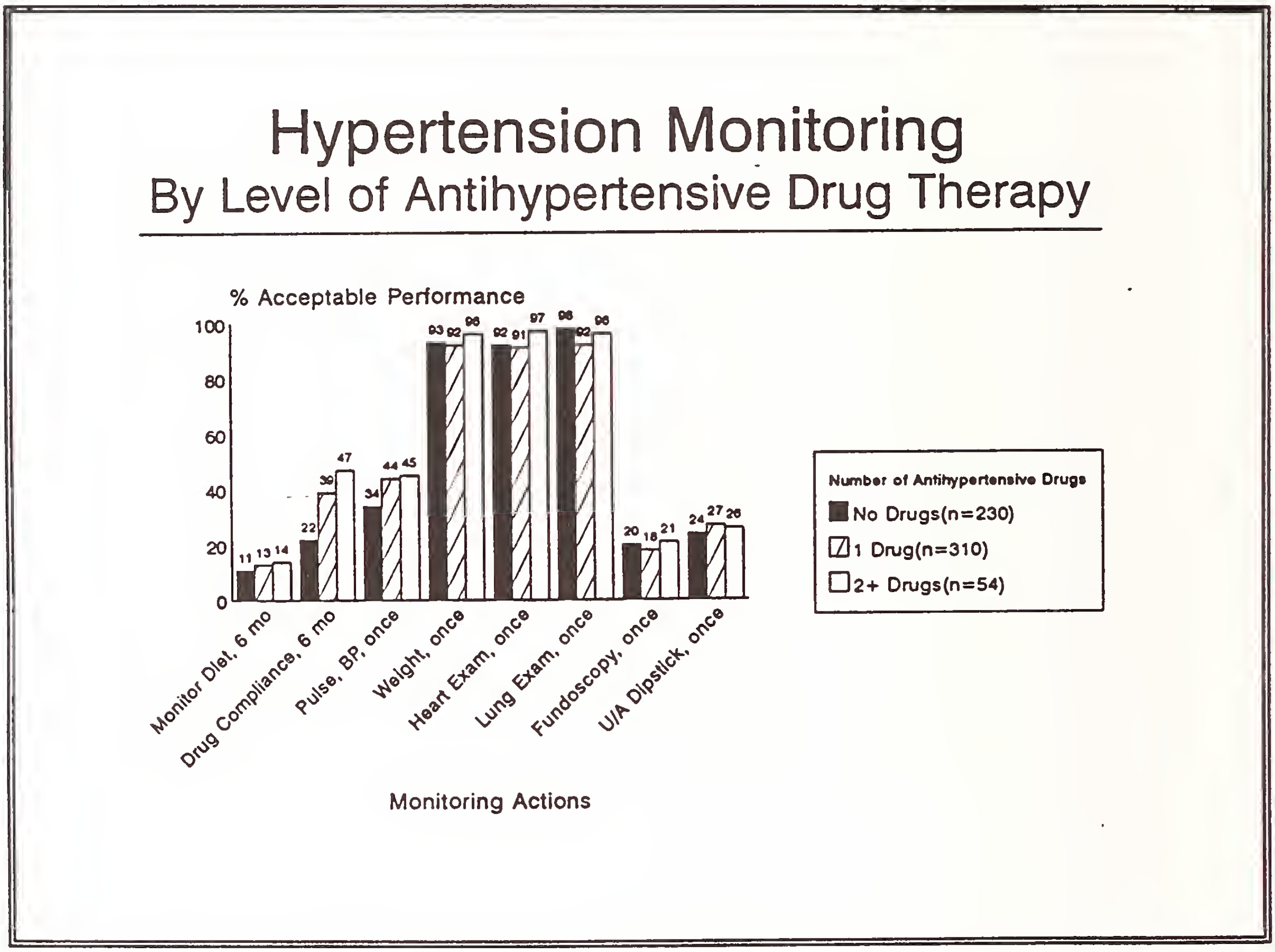
Indicator	Criterion	Your Rates		Peer Group Rates	
		Number of Patients	Percent Acceptable Performance	Average Number of Patients per Physician	Average Percent Acceptable Performance
	1 + leukocyte esterase: Within 1 wk check urine cult. or microsc. exam. If positive, start treatment.	0	%	0.5	43%
	≥1 + ketones, no urine glucose: Within 1 wk review history for fasting, dehydration, alcohol use. Hydrate and review patient by next day. OR ≥1 + ketones and urine glucose: Within 1 wk check bl. glucose at known relationship to food intake, serum total CO_2 and ketones. Review by next day.	0	%	0.0	%
	≥1 + heme: Within 2 wks check for urinary infec. If infec., treat with antibiotic. OR ≥1 + heme, no urinary infec., with ≥1 + proteinuria: Within 2 wks microsc. exam of urine sediment. If hematuria confirmed and red cell casts seen, refer to nephrology. If no red cell casts seen, do IVP AND/OR cystoscopy AND/OR ultrasound. OR ≥1 + heme, no urine infec., no proteinuria: Within 2 wks, prostate exam in male, pelvic exam in female. Do IVP AND/OR cystoscopy AND/OR ultrasound.	0	%	0.4	50%

HYPERTENSION

HYPERTENSION

The table on the opposite page displays the results of the review of your hypertensive patients' charts with comparisons to your specialty. The three diagnosis indicators are shown in the far left column. The next column presents the specific criteria used to evaluate the quality of care. The full text of the criteria with medical references is given in the DEMPAQ Self-Assessment Workbook. The remaining columns show your performance rates on the hypertension criteria compared to your specialty group rates.

The figure below presents statewide data for patients with hypertension.



CLINICAL ITEM REPORT - Diagnosis
Review Period: July 1, 1989 - June 30, 1991

ID Number:
Peer Group: General Practice

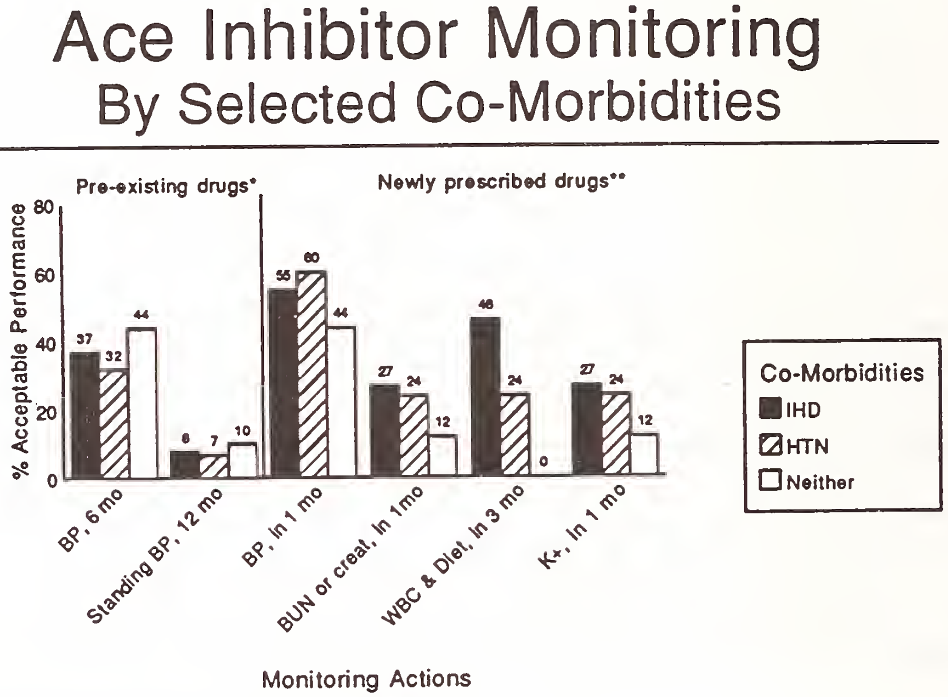
CODE: 01 **HYPERTENSION**

Indicator	Criterion	Your Rates		Peer Group Rates	
		Number of Patients	Percent Acceptable Performance	Average Number of Patients per Physician	Average Percent Acceptable Performance
Old Diagnosis Monitoring	Overall Score	6	51%	7.5	50%
	Monitor diet - q. 6 mos	5	0%	6.7	9%
	Monitor drug compliance (if applicable) - q. 6 mos	4	25%	6.4	33%
	Pulse, BP - q. 6 mos	5	60%	6.7	40%
	Weight - once	6	100%	7.5	96%
	Heart exam - once	6	100%	7.4	90%
	Lung exam - once	6	100%	7.4	88%
	Fundoscopy - once	6	0%	7.4	20%
	U/A dipstick for protein - once	6	0%	7.4	17%
Evidence for a New Diagnosis	DBP ≥90 on two occasions OR SBP ≥140 on two occasions OR any DBP ≥130	0	%	0.6	58%
Search for Treatable Causes	If DBP >105 on two occasions, look for renal disease AND hyperaldosteronism AND obesity AND inq. re alcohol intake AND if on hypertensive med., possible causative role.	0	%	0.5	0%

ACE INHIBITORS

The table on the opposite page displays the results of the review of those patients on ACE inhibitors, with comparison to your specialty. The five drug indicators are shown in the far left column. The next column presents the specific criteria used to evaluate the quality of care. The full text of the criteria with medical references is given in the DEMPAQ Self-Assessment Workbook. The remaining columns show your performance rates on the ACE Inhibitor criteria compared to your specialty group rates.

The figure below presents statewide data for all patients taking ACE inhibitors.



* Pre-existing drugs: n=19 (IHD), n=77 (HTN), n=27 (Neither)

** Newly prescribed drugs: n=11 (IHD), n=67 (HTN), n=16 (Neither)

Drugs within this class

Generic	Trade
Captopril	Capoten
Enalapril	Vasotec
Lisinopril	Prinivil, Zenstril

CLINICAL ITEM REPORT - Drugs
Review Period: July 1, 1989 - June 30, 1991

ID Number:
Peer Group: General Practice

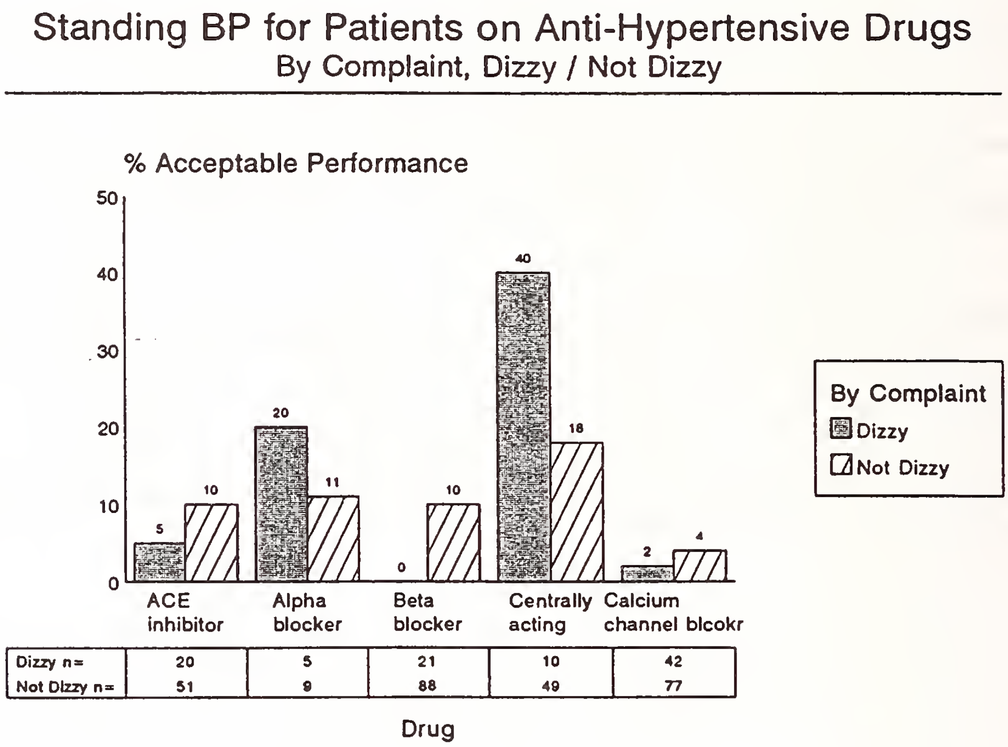
CODE: 01 **ANGIOTENSIN-CONVERTING ENZYME (ACE) INHIBITOR**

Indicator	Criterion	Your Rates: Number of Patients	Your Rates: Percent Acceptable Performance	Peer Group Rates: Average Number of Patients per Physician	Peer Group Rates: Average Percent Acceptable Performance
Dose and Frequency	Both dose and frequency documented	3	100%	2.7	93%
	Dose Documented	3	100%	2.7	96%
	Frequency Documented	3	100%	2.7	93%
Drug Indications	Drug prescribed appropriately for: HTN, CHF, Bartter's syndrome	2	100%	1.4	90%
Condition Contraindications	No contraindications or use of drug justified despite contraindications: **Risk/benefit:** Angioedema, hyperkalemia, COPD, chronic cough	3	67%	2.7	94%
Drug Contraindications	No contraindications or use of drug justified despite contraindications: **Absolute:** None **Risk/benefit:** Potassium-sparing diuretics	3	100%	2.7	94%
Drug Monitoring	Overall Monitoring Score	3	0%	2.3	19%
	Old Drugs:				
	BP - q. 6 mos, regular	1	0%	1.0	33%
	BP - q. 12 mos, standing	0	%	0.7	0%
	If renal dis. - BUN or creat. q. 3 mos	0	%	0.0	%
	New Drugs:				
	BP - within 1 mo start of therapy	2	0%	1.2	40%
	BUN or creat. - within 1 mo	2	0%	1.2	19%
	WBC and diff. - within 3 mos	2	0%	1.1	14%
	K+ - within 1 mo	2	0%	1.2	19%
	If renal dis.- BUN or creat. within 3 mos	0	%	0.0	100%

Alpha Blockers

The table on the opposite page displays the results of the review of those patients on alpha blockers, with comparison to your specialty. The five drug indicators are shown in the far left column. The next column presents the specific criteria used to evaluate the quality of care. The full text of the criteria with medical references is given in the DEMPAQ Self-Assessment Workbook. The remaining columns show your performance rates on the alpha blocker criteria compared to your specialty group rates.

The figure below presents statewide data for patients taking alpha blockers.



Drugs within this class

Generic	Trade
Prazosin	Minipress
Terazosin	Hytrin

CLINICAL ITEM REPORT - Drugs
Review Period: July 1, 1989 - June 30, 1991

ID Number:
Peer Group: General Practice

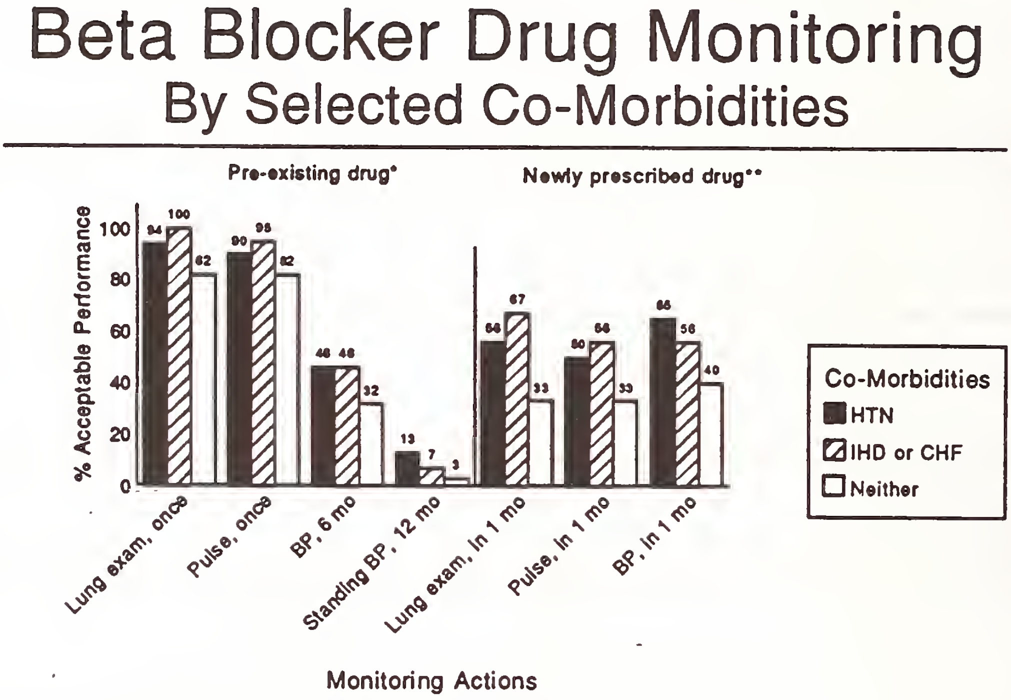
CODE: 03 **ANTIADRENERGIC - PERIPHERAL ALPHA BLOCKER**

Indicator	Criterion	Your Rates		Peer Group Rates	
		Number of Patients	Percent Acceptable Performance	Average Number of Patients per Physician	Average Percent Acceptable Performance
Dose and Frequency	Both dose and frequency documented		%	1.4	57%
	Dose Documented		%	1.4	71%
	Frequency Documented		%	1.4	57%
Drug Indications	Drug prescribed appropriately for: HTN, CHF, Raynaud's phen., bladder outlet obstr., benign prostatic hypertrophy		%	0.6	100%
Condition Contraindications	No contraindications or use of drug justified despite contraindications: **Risk/benefit:** Orthostatic hypotension		%	1.4	100%
Drug Contraindications	NA				
Drug Monitoring	Overall Monitoring Score		%	1.3	33%
	Old Drugs:				
	BP - q. 6 mos, regular		%	0.7	33%
	BP - q. 12 mos, standing		%	0.3	50%
	If CHF - wt and lung exam q. 6 mos		%	0.0	%
	New Drugs:				
	BP - within 1 mo start of therapy		%	0.6	50%
	If CHF - wt and lung exam within 1 mo start of therapy		%	0.0	%
	If angina - within 1 mo start of therapy educate patient re possible exacerbation		%	0.0	%
	If incontinence - follow-up visit within 1 mo start of therapy		%	0.0	%

BETA BLOCKERS

The table on the opposite page displays the results of the review of those patients on beta blockers, with comparison to your specialty. The five drug indicators are shown in the far left column. The next column presents the specific criteria used to evaluate the quality of care. The full text of the criteria with medical references is given in the DEMPAQ Self-Assessment Workbook. The remaining columns show your performance rates on the beta blocker criteria compared to your specialty group rates.

The figure below shows statewide data for patients taking beta blockers.



* Pre-existing drugs: n=115 (HTN), n=40 (IHD/CHF), n=50 (Neither)
** Newly prescribed drugs: n=34 (HTN), n=9 (IHD/CHF), n=15 (Neither)

Drugs within this class

Generic	Trade
Acebutolol	Sectral
Atenolol	Tenormin
Carteolol	Cartrol
Labetalol	Normodyne, Trandate
Metoprolol	Lopressor
Nadolol	Corgard
Penbutolol	Levatol
Pindolol	Visken
Propranolol	Inderal
Timolol	Blocadren
Kerlone	Betaxolol

CLINICAL ITEM REPORT - Drugs
Review Period: July 1, 1989 - June 30, 1991

ID Number:
Peer Group: General Practice

CODE: 04 **ANTIADRENERGIC - BETA BLOCKER**

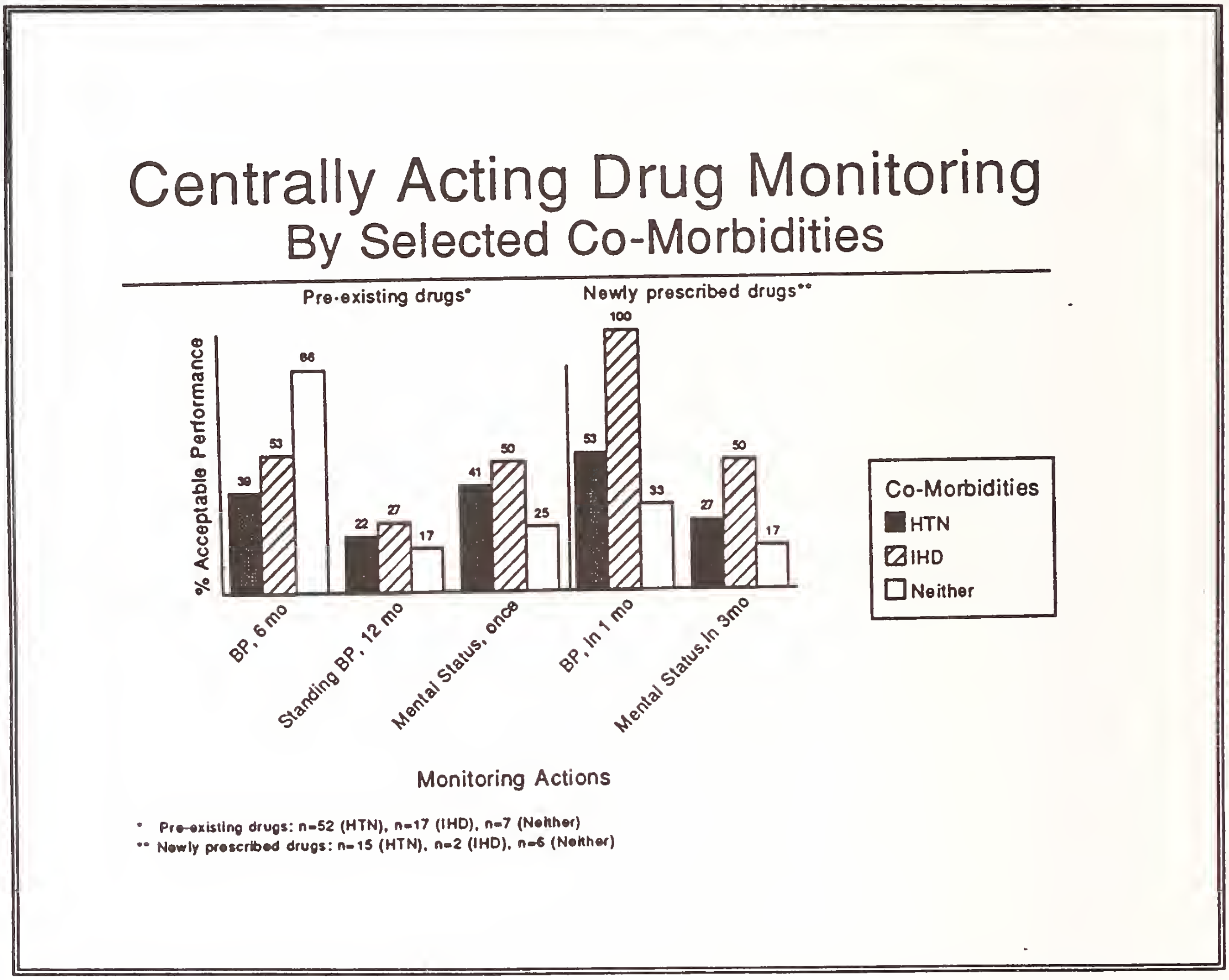
		Your Rates		Peer Group Rates	
Indicator	**Criterion**	Number of Patients	Percent Acceptable Performance	Average Number of Patients per Physician	Average Percent Acceptable Performance
Dose and Frequency	Both dose and frequency documented	3	100%	3.5	92%
	Dose Documented	3	100%	3.5	97%
	Frequency Documented	3	100%	3.5	92%
Drug Indications	Drug prescribed appropriately for: Angina, vent. arrhyth., HTN, hypertrophic cardiomyopathy, myocardial reinfarct prophylaxis, pheochromocytoma, vascular headache prophylaxis, non-Parkinson's tremor, "stage-fright" anxiety, thyrotoxicosis, Barlow's synd., atrial arrhythmias	0	%	1.1	68%
Condition Contraindications	No contraindications or use of drug justified despite contraindications: **Absolute:** Heart block, asthma, COPD **Risk/benefit:** Mental depression, Raynaud's phen., intermittent claudication	3	100%	3.5	88%
Drug Contraindications	No contraindications or use of drug justified despite contraindications: **Absolute:** None **Risk/benefit:** Calcium ch. blockers, oral antidiabetic agents, insulin, indomethacin, Timolol eyedrops	3	33%	3.5	84%
Drug Monitoring	Overall Monitoring Score	3	80%	3.4	54%
	Old Drugs:				
	Lung exam - once	3	100%	2.4	85%
	Pulse rate - once	3	100%	2.4	87%
	BP - q. 6 mos, regular	3	67%	2.3	33%

(cont'd)

Indicator	Criterion	Your Rates		Peer Group Rates	
		Number of Patients	Percent Acceptable Performance	Average Number of Patients per Physician	Average Percent Acceptable Performance
	BP - q. 12 mos, standing	1	0%	1.7	6%
	If depression - mental state (mood) once	0	%	0.2	100%
	If asthma or emphysema - lung exam once	0	%	0.1	100%
	New Drugs:				
	Lung exam - within 1 mo start of therapy	0	%	1.0	36%
	Pulse rate - within 1 mo start of therapy	0	%	1.0	47%
	BP - within 1 mo start of therapy	0	%	1.0	52%
	If depression - mental state within 3 mos	0	%	0.0	%
	If on oral hypoglycemics or insulin, educate patient re masking of hypoglycemia	0	%	0.1	0%
	If asthma/emphysema - lung exam within 1 mo start of therapy	0	%	0.0	0%

The table on the opposite page displays the results of the review of those patients on centrally acting antiadrenergic drugs, with comparison to your specialty. The five drug indicators are shown in the far left column. The next column presents the specific criteria used to evaluate the quality of care. The full text of the criteria with medical references is given in the DEMPAQ Self-Assessment Workbook. The remaining columns show your performance rates on the centrally acting drug criteria compared to your specialty group rates.

The figure below shows statewide data for patients taking centrally acting drugs.



Centrally Acting Drug Monitoring
By Selected Co-Morbidities

* Pre-existing drugs: n=52 (HTN), n=17 (IHD), n=7 (Neither)
** Newly prescribed drugs: n=15 (HTN), n=2 (IHD), n=6 (Neither)

Drugs within this class

Generic	Trade
Clonidine	Catapres (includes patches)
Guanabenz	Wytensin
Guanfacine	Tenex
Methyldopa	Aldomet
Reserpine	Serpasil

CLINICAL ITEM REPORT - Drugs
Review Period: July 1, 1989 - June 30, 1991

ID Number:
Peer Group: General Practice

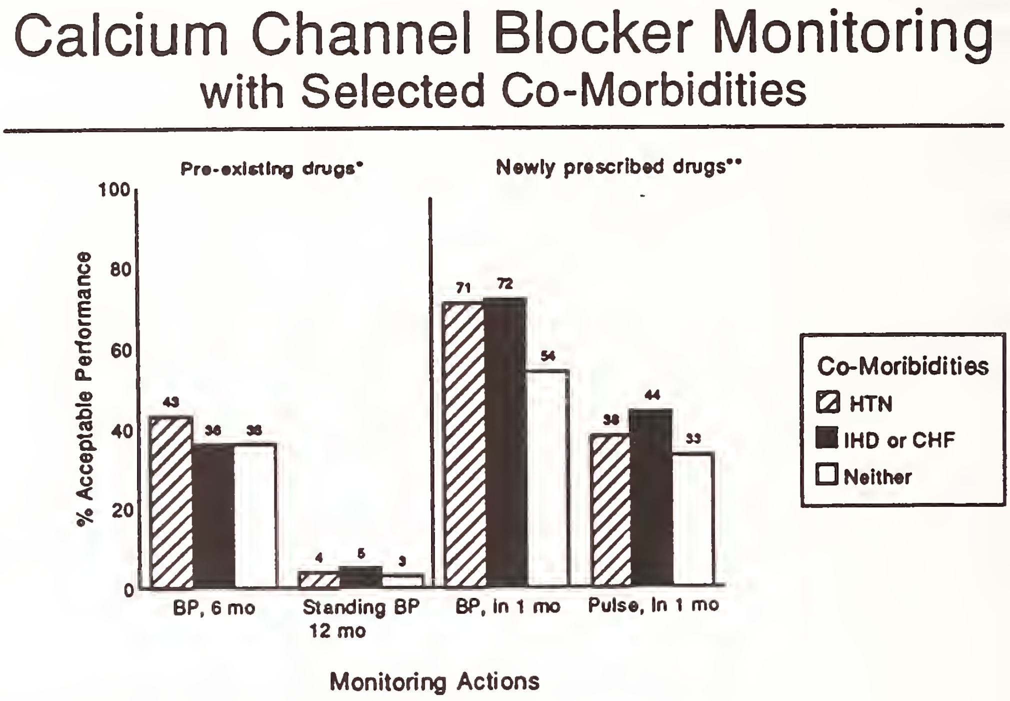
CODE: 05 ANTIADRENERGIC - CENTRALLY ACTING

Indicator	Criterion	Your Rates		Peer Group Rates	
		Number of Patients	Percent Acceptable Performance	Average Number of Patients per Physician	Average Percent Acceptable Performance
Dose and Frequency	Both dose and frequency documented	4	100%	2.1	85%
	Dose Documented	4	100%	2.1	87%
	Frequency Documented	4	100%	2.1	85%
Drug Indications	Drug prescribed appropriately for: HTN; headache, vascular; nicotine dependence	1	0%	0.7	88%
Condition Contraindications	No contraindications or use of drug justified despite contraindications: **Absolute:** Hepatic disease (active) **Risk/benefit:** Mental depression	4	100%	2.1	97%
Drug Contraindications	No contraindications or use of drug justified despite contraindications: **Absolute:** None **Risk/benefit:** Tricyclic antidepressants, monoamine oxidase inhibitors	4	100%	2.1	97%
Drug Monitoring	Overall Monitoring Score	4	46%	1.9	26%
	Old Drugs:				
	BP - q. 6 mos, regular	3	67%	1.1	44%
	BP - q. 12 mos, standing	3	33%	1.1	12%
	Mental status (mood) - once	2	50%	1.1	29%
	If methyldopa - CBC, Hct once	0	%	0.3	50%
	If methyldopa - SGOT, SGPT - once	0	%	0.2	0%
	New Drugs:				
	BP - within 1 mo start of therapy	1	100%	0.7	31%
	Mental status (mood) - within 3 mos	1	0%	0.7	13%
	If methyldopa - HCT, CBC within 3 mos	0	%	0.1	0%
	If methyldopa - SGOT, SGPT within 3 mos	0	%	0.1	0%

CALCIUM CHANNEL BLOCKER

The table on the opposite page displays the results of the review of those patients on calcium channel blockers with comparison to your specialty. The five drug indicators are shown in the far left column. The next column presents the specific criteria used to evaluate the quality of care. The full text of the criteria with medical references is given in the DEMPAQ Self-Assessment Workbook. The remaining columns show your performance rates on the calcium channel criteria compared to your specialty group rates.

The figure below shows statewide data for patients taking calcium channel blockers.


Calcium Channel Blocker Monitoring
with Selected Co-Morbidities

* Pre-existing drugs: n=120(HTN), n=76(IHD or CHF), n=66(Neither)
**Newly prescribed drugs: n=77(HTN), n=32(IHD or CHF), n=24(Neither)

Drugs within this class

Generic	Trade
Diltiazem	Cardizem
Nicardipine	Cardene
Nifedipine	Adalat, Procardia
Verapamil	Calan, Isoptin, Verelan

CLINICAL ITEM REPORT- Drugs
Review Period: July 1, 1989 - June 30, 1991

ID Number:
Peer Group: General Practice

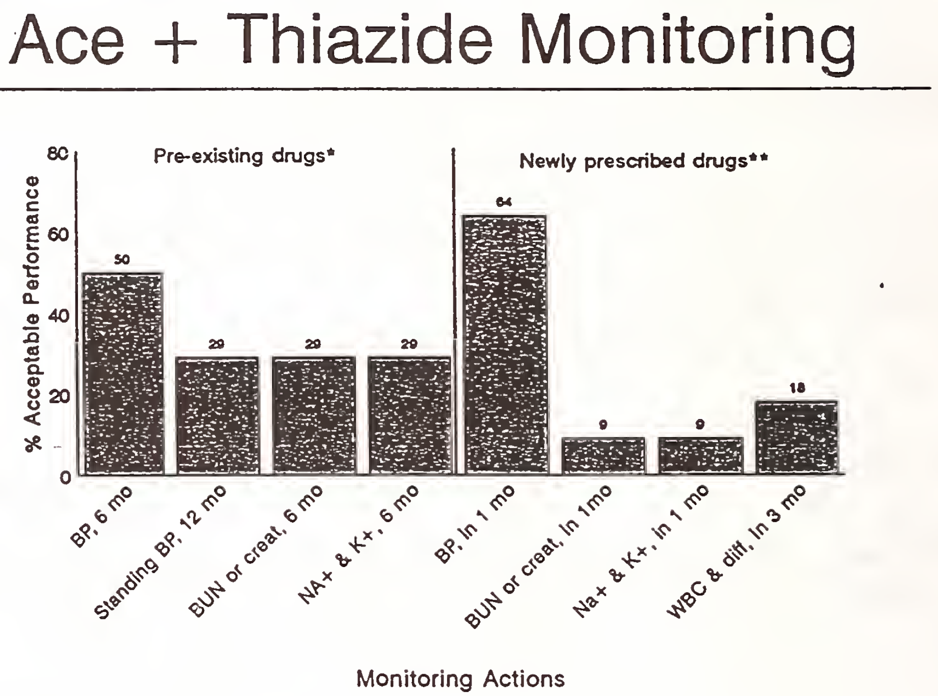
CODE: 06 **CALCIUM CHANNEL BLOCKER**

		Your Rates		Peer Group Rates	
Indicator	Criterion	Number of Patients	Percent Acceptable Performance	Average Number of Patients per Physician	Average Percent Acceptable Performance
Dose and Frequency	Both dose and frequency documented	8	100%	3.6	90%
	Dose Documented	8	100%	3.6	90%
	Frequency Documented	8	100%	3.6	90%
Drug Indications	Drug prescribed appropriately for: Angina, HTN, Raynaud's phen., hypertrophic cardiomyopathy, migraine	3	33%	1.4	91%
Condition Contraindications	No contraindications or use of drug justified despite contraindications: **Absolute:** Heart block, sick sinus synd., Wolff-Parkinson-White synd. **Risk/benefit:** Bradycardia, CHF	8	88%	3.6	87%
Drug Contraindications	NA				
Drug Monitoring	Overall Monitoring Score	8	40%	3.2	40%
	Old Drugs:				
	BP - q. 6 mos, regular	5	40%	1.9	55%
	BP - q. 12 mos, standing	3	0%	1.4	1%
	New Drugs:				
	BP - within 1 mo start of therapy	3	67%	1.3	55%
	Pulse - within 1 mo start of therapy	3	67%	1.3	41%
	If taking beta blocker - pulse rate and rhythm or ECG within 1 mo start of therapy	0	%	0.1	33%
	If on digoxin and add verapamil - digitalis level or lower digoxin dose within 1 mo start of therapy	1	0%	0.0	0%

ACE INHIBITOR + THIAZIDE DIURETIC

The table on the opposite page displays the results of the review of those patients on combination ACE inhibitor/thiazide diuretic with comparison to your specialty. The five drug indicators are shown in the far left column. The next column presents the specific criteria used to evaluate the quality of care. The full text of the criteria with medical references is given in the DEMPAQ Self-Assessment Workbook. The remaining columns show your performance rates on the criteria compared to your specialty group rates.

The figure below shows statewide data for patients taking this combination drug.



* Pre-existing drugs: N=14
** Newly prescribed drugs: N= 11

Drugs within this class

Generic	Trade
Hydrochlorothiazide+Captopril	Capozide
Hydrochlorothiazide+Enalapril	Vaseretic
Hydrochlorothiazide+Lisinopril	Prinizide, Zestoretic

CLINICAL ITEM REPORT - Drugs
Review Period: July 1, 1989 - June 30, 1991

ID Number:
Peer Group: General Practice

CODE: 11 **ACE INHIBITOR + THIAZIDE DIURETIC**

		Your Rates		Peer Group Rates	
Indicator	Criterion	Number of Patients	Percent Acceptable Performance	Average Number of Patients per Physician	Average Percent Acceptable Performance
Dose and Frequency	Both dose and frequency documented		%	1.3	100%
	Dose Documented		%	1.3	100%
	Frequency Documented		%	1.3	100%
Drug Indications	Drug prescribed appropriately for: HTN if stepped therapy fails		%	0.8	100%
Condition Contraindications	No contraindications or use of drug justified despite contraindications: **Absolute:** Severe renal impairment, hypercalcemia, hyperuricemia **Risk/benefit:** Angioedema, hyperkalemia, gout, COPD, impaired hepatic function, SLE		%	1.3	100%
Drug Contraindications	No contraindications or use of drug justified despite contraindications: **Absolute:** None **Risk/benefit:** Oral anti-diabetic agents, insulin, long-term high-dose corticosteroid therapy		%	1.3	50%
Drug Monitoring	Overall Monitoring Score		%	1.3	20%
	Old Drugs:				
	BP - q 6 mos, regular		%	0.5	0%
	BP - q. 12 mos, standing		%	0.5	50%
	BUN or creat. - q. 6 mos		%	0.5	50%
	Na+ and K+ - q. 6 mos		%	0.5	50%
	If on lithium - lithium levels q. 3 mos		%	0.0	%
	If diabetes - bl. glucose q. 3 mos		%	0.3	100%
	If long-term steroids - K+ q. 3 mos		%	0.0	%
	If impaired liver function - K+ and Na+ q. 3 mos		%	0.0	%

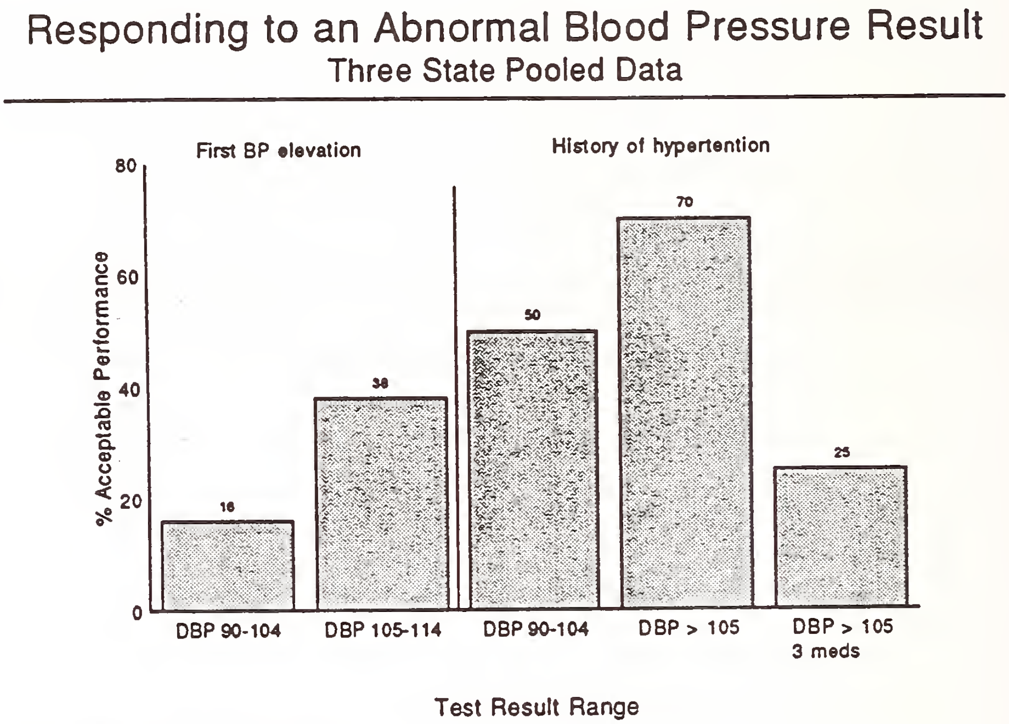
(cont'd)

Indicator	Criterion	Your Rates: Number of Patients	Your Rates: Percent Acceptable Performance	Peer Group Rates: Average Number of Patients per Physician	Peer Group Rates: Average Percent Acceptable Performance
	New Drugs:				
	BP - within 1 mo		%	0.8	0%
	BUN or creat. - within 1 mo		%	0.8	0%
	Na+ and K+ - within 1 mo		%	0.8	0%
	WBC and diff. - within 3 mos		%	0.8	0%
	If diabetes - bl. glucose within 3 mos		%	0.3	0%
	If lithium - lithium levels within 3 mos		%	0.0	%
	If on long-term steroids - K+ within 3 mos		%	0.0	%
	If impaired liver function - Na+ and K+ within 3 mos		%	0.0	%

BLOOD PRESSURE

The table on the opposite page displays the results of the review of those patients with abnormal blood pressure tests, with comparisons to your specialty. The three test indicators are shown in the far left column. The next column presents the specific criteria used to evaluate the quality of care. The full text of the criteria with medical references is given in the DEMPAQ Self-Assessment Workbook. The remaining columns show your performance rates on the criteria compared to your specialty group rates.

The figure below shows statewide data for patients with abnormal blood pressure measurements.



N for ranges (left to right) 105, 13, 326, 47, 8

CLINICAL ITEM REPORT - Tests
Review Period: July 1, 1989 - June 30, 1991

ID Number:
Peer Group: General Practice

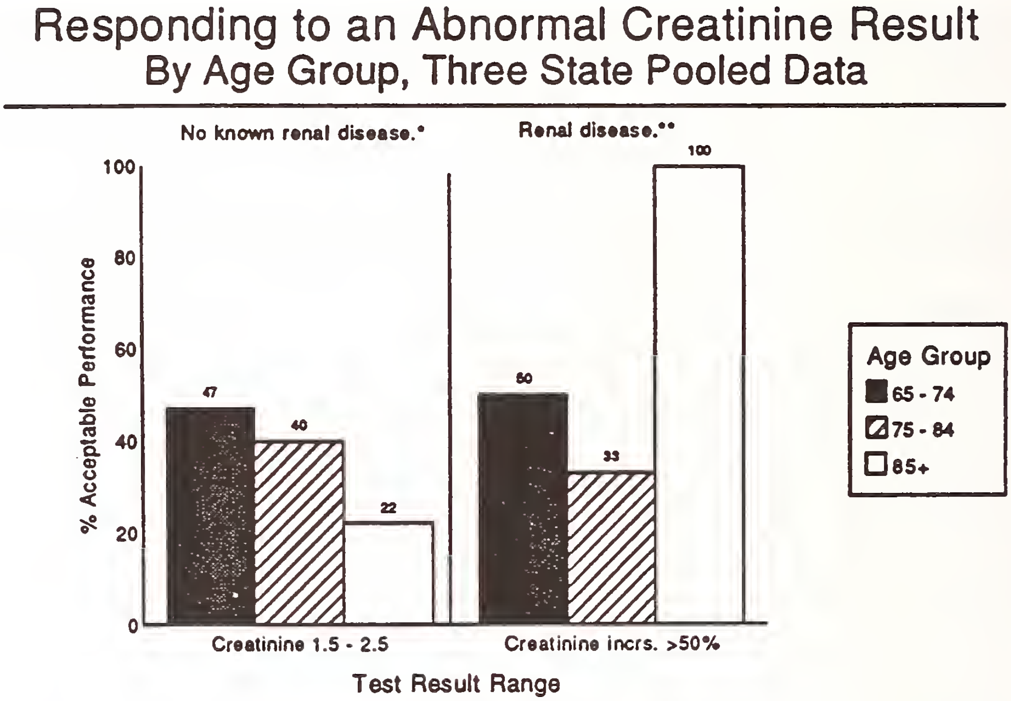
CODE: 01 **BLOOD PRESSURE - DIASTOLIC BLOOD PRESSURE ≥90**

Indicator	Criterion	Your Rates		Peer Group Rates	
		Number of Patients	Percent Acceptable Performance	Average Number of Patients per Physician	Average Percent Acceptable Performance
Test Indications	Tests ordered appropriately for: **Drug Monitoring:** Estrogen, ethanol, steroids, thyroxin, non-steroidals, bronchodilators **Conditions:** HTN, cor. artery disease, renal disease, diabetes	4	75%	3.3	97%
Test Urgent Response	Patient referred to hospital or ER for lab values: If patient not known hypertensive, diast. BP >130 If patient hypertensive on treatment, diast. BP >140	0	%	0.0	%
Test Response	Overall score:	1	100%	2.4	52%
	Abnormal test results appropriately followed up:				
	Diast. BP 90-104 at least twice as new finding: Within 1 wk, treat w/no added salt, wt reduction, lower alcohol. If on HTN-prod.med., decr. or disc. Retest within 2 mos.	0	%	0.7	35%
	Diast. BP 105-114 at least twice as new finding: Within 1 wk, treat as above **OR** drug therapy as below. Retest within 1 wk.	0	%	0.1	0%
	Diast. BP 115-130 at least twice as new finding: Within 1 day, initiate therapy w/1 or more anti-HTN med. Retest within 2 wks.	0	%	0.0	%
	Diast. BP 90-104 and previously abnormal: Within 1 wk, reaffirm treatment. Add, incr., or subst. meds unless patient not complying w/current. Retest within 3 mos. If not controlled within 6 mos and not on 2-drug therapy, req. consult. **OR** referral.	1	100%	1.3	51%
	Diast. BP >105 and previously abnormal: Within 1 day, add, incr., or subst. meds unless patient not complying with current. Retest within 3 mos. If not controlled within 6 mos and not on 2- or 3-drug therapy, req. consult. **OR** referral.	0	%	0.4	71%
	Diast. BP >105, previously abnormal, and on 3-drug therapy more than 3 mos: Within 1 day, referral or workup. Retest within 3 mos. If not controlled within 3 mos, req. consult. **OR** referral.	0	%	0.0	%

SERUM CREATININE

The table on the opposite page displays the results of the review of those patients with abnormal serum creatinine tests, with comparisons to your specialty. The three test indicators are shown in the far left column. The next column presents the specific criteria used to evaluate the quality of care. The full text of the criteria with medical references is given in the DEMPAQ Self-Assessment Workbook. The remaining columns show your performance rates on the criteria compared to your specialty group rates.

The figure below shows statewide data for patients with abnormal serum creatinine levels.


Responding to an Abnormal Creatinine Result
By Age Group, Three State Pooled Data

* No known renal disease: n=66 (65-74), n=77 (75-84), n=32 (85+)
**Renal Disease: n=8 (65-74), n=6 (75-84), n=1 (85+)

CLINICAL ITEM REPORT - Tests
Review Period: July 1, 1989 - June 30, 1991

ID Number:
Peer Group: General Practice

CODE: 07 **CREATININE - SERUM CREATININE >1.5**

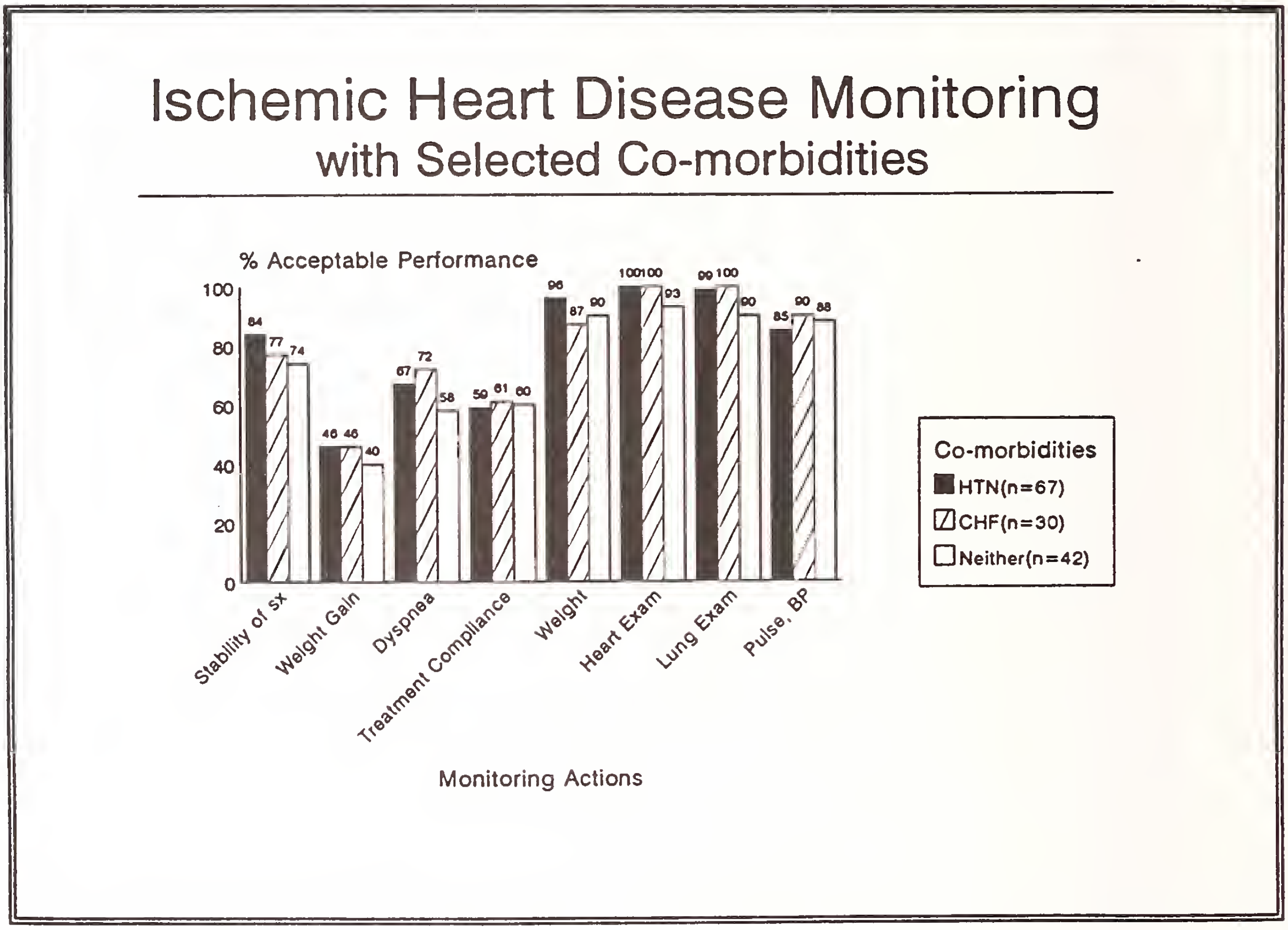
Indicator	Criterion	Your Rates		Peer Group Rates	
		Number of Patients	Percent Acceptable Performance	Average Number of Patients per Physician	Average Percent Acceptable Performance
Test Indications	Tests ordered appropriately for: **Conditions:** Renal disease, HTN, diabetes, CHF, new onset proteinuria or abnorm. urine cell count, ACE inh., nonsteroidal anti-inflamm. drugs, all drugs mainly excreted through kidneys		%	1.6	85%
Test Urgent Response	Patient referred to hospital or ER for lab values: New value creat. >10		%	0.0	%
Test Response	Overall score:		%	1.4	57%
	Abnormal test results appropriately followed up:				
	Not Known Renal Disease:				
	New finding creat. 1.5-2.5: Within 1 mo, if on drugs that affect renal func., decr. or disc. meds. Check urine sediment exam and culture, and retest serum creat. within 3 mos. If still abnorm., req. consult OR referral.		%	1.3	65%
	New finding >2.5 and if on drugs that affect renal func.: Within 2 wks decr. or disc. meds. Check urinary sediment exam and culture and check 24-hr urine collection for creat. clearance. Retest creat. within 2 mos.		%	0.0	%
	Known Renal Disease:				
	Creat. incr. >50% above that patient's prior baseline: Within 2 wks, if on drugs that affect renal func., decr. or disc. meds. Check urinary sediment exam and culture and creat. clearance. If creat. clearance has fallen, req. consult OR referral within 2 mos.		%	0.1	0%

ISCHEMIC HEART DISEASE

ISCHEMIC HEART DISEASE

The table on the opposite page displays the results of the review of your ischemic heart disease patients' charts with comparisons to your specialty. The three diagnosis indicators are shown in the far left column. The next column presents the specific criteria used to evaluate the quality of care. The full text of the criteria with medical references is given in the DEMPAQ Self-Assessment Workbook. The remaining columns show your performance rates on the criteria compared to your specialty group rates.

The figure below shows statewide data for patients with ischemic heart disease.



CLINICAL ITEM REPORT - Diagnosis
Review Period: July 1, 1989 - June 30, 1991

ID Number:
Peer Group: General Practice

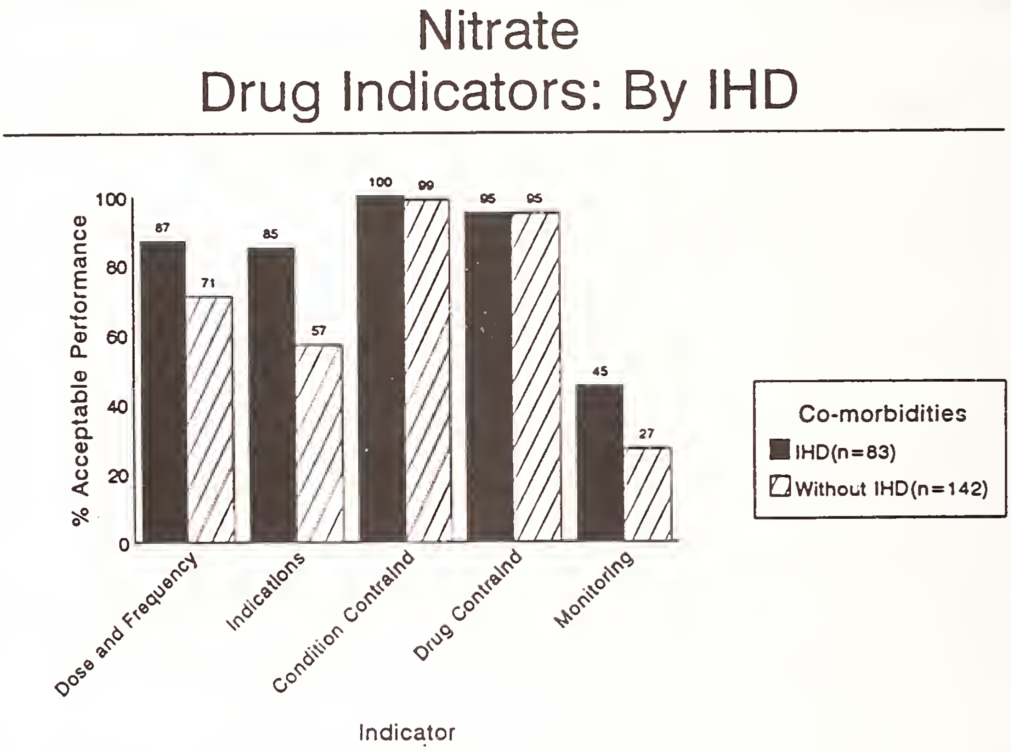
Code: 02 ISCHEMIC HEART DISEASE

Indicator	Criterion	Your Rates		Peer Group Rates	
		Number of Patients	Percent Acceptable Performance	Average Number of Patients per Physician	Average Percent Acceptable Performance
Old Diagnosis Monitoring	Overall Score		%	2.1	79%
	Stability of symptoms - once		%	2.1	77%
	Weight gain - once		%	1.9	34%
	Dyspnea - once		%	2.1	72%
	Review compliance (diet, drugs, smoking, alcohol, if applicable) - once		%	1.9	60%
	Weight - once		%	2.1	100%
	Heart exam - once		%	2.1	98%
	Lung exam - once		%	2.1	96%
	Pulse, BP - once		%	2.1	88%
Evidence for a New Diagnosis	Cardiac chest pain OR exercise tolerance test OR positive cardiac catheterization		%	0.7	4%
Search for Treatable Causes	HTN AND valvular heart disease AND anemia AND inq. re smoking habits AND obesity AND serum cholesterol AND bl. glucose		%	0.5	10%

NITRATES

The table on the opposite page displays the results of the review of those patients on nitrates with comparison to your specialty. The five drug indicators are shown in the far left column. The next column presents the specific criteria used to evaluate the quality of care. The full text of the criteria with medical references is given in the DEMPAQ Self-Assessment Workbook. The remaining columns show your performance rates on the nitrate criteria compared to your specialty group rates.

The figure below shows statewide data for patients using nitrates.



Drugs within this class

Generic	**Trade**
Erythrityl tetranitrate	Cardilate
Isosorbide dinitrate	Dilatrate SR, Iso-Bid, Isonate, Isorbid, Isordil, Isotrate, Sorbitrate
Nitroglycerin (buccal, lingual, oral, sublingual)	Nitro-Bid, Nitrocap, Nitrogard, Nitroglyn, Nitrol, Nitrolin, Nitrolingual, Nitronet, Nitrospan, Nitrostat, Tridil
Nitroglycerin (transdermal)	Deponit, Nitrocine, Nitrodisc, Nitro-Dur, NTS, Transderm-Nitro
Pentaerythritol tetranitrate	Duotrate, Naptrate, Pentritil, Pentylan, Peritrate

CLINICAL ITEM REPORT - Drugs
Review Period: July 1, 1989 - June 30, 1991

ID Number:
Peer Group: General Practice

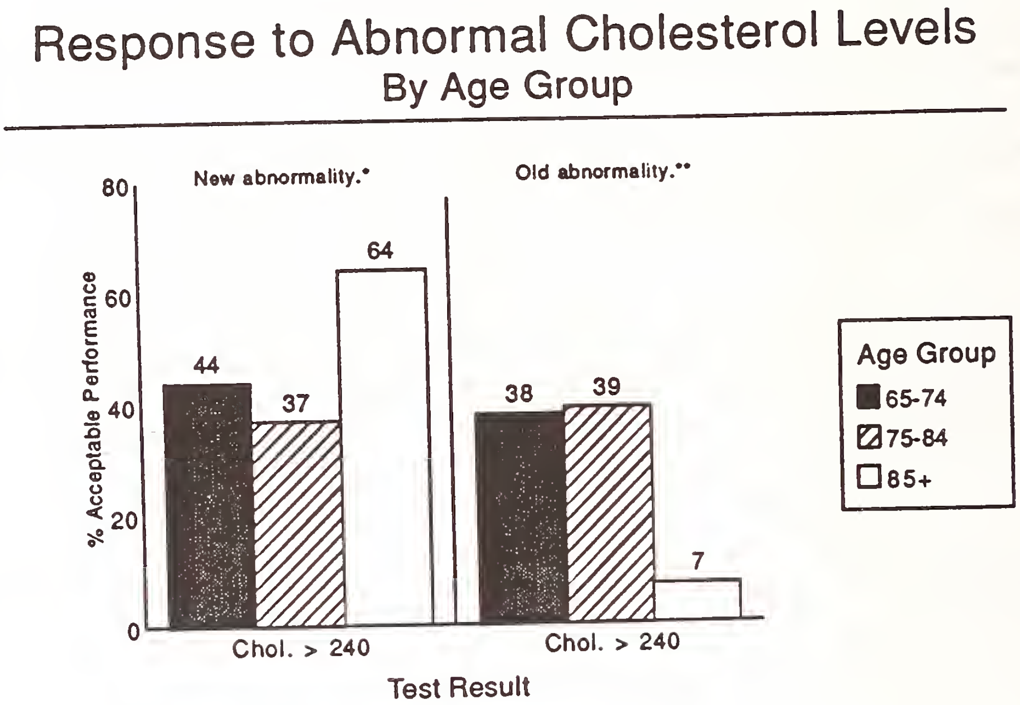
CODE: 21 **NITRATE**

Indicator	Criterion	Your Rates		Peer Group Rates	
		Number of Patients	Percent Acceptable Performance	Average Number of Patients per Physician	Average Percent Acceptable Performance
Dose and Frequency	Both dose and frequency documented	4	75%	2.6	66%
	Dose Documented	4	100%	2.6	83%
	Frequency Documented	4	75%	2.6	78%
Drug Indications	Drug prescribed appropriately for: Angina, CHF	2	0%	1.0	43%
Condition Contraindications	No contraindications or use of drug justified despite contraindications: **Absolute:** None **Risk/benefit:** Orthostatic hypotension	4	100%	2.6	98%
Drug Contraindications	No contraindications or use of drug justified despite contraindications: **Absolute:** Transdermal nitrates not to be used continuously for 24 hrs. **Risk/benefit:** None	4	100%	2.6	93%
Drug Monitoring	Overall Monitoring Score	0	%	0.6	35%
	Old Drugs:				
	If CHF - weight and lung exam every 6 mos	0	%	0.1	33%
	New Drugs:				
	If angina - educate patient re possible exacerbation.	0	%	0.4	25%
	If CHF - weight and lung exam within 1 mo start of therapy	0	%	0.0	100%

CHOLESTEROL

The table on the opposite page displays the results of the review of those patients with abnormal cholesterol tests, with comparisons to your specialty. The three test indicators are shown in the far left column. The next column presents the specific criteria used to evaluate the quality of care. The full text of the criteria with medical references is given in the DEMPAQ Self-Assessment Workbook. The remaining columns show your performance rates on the criteria compared to your specialty group rates.

The figure below shows statewide data for patients with abnormal cholesterol levels.



* New abn: n=121 (65-74), n=87 (75-84), n=11 (85+)
**Old abn: n=185 (65-74), n=110 (75-84), n=15 (85+)

CLINICAL ITEM REPORT - Tests
Review Period: July 1, 1989 - June 30, 1991

ID Number:
Peer Group: General Practice

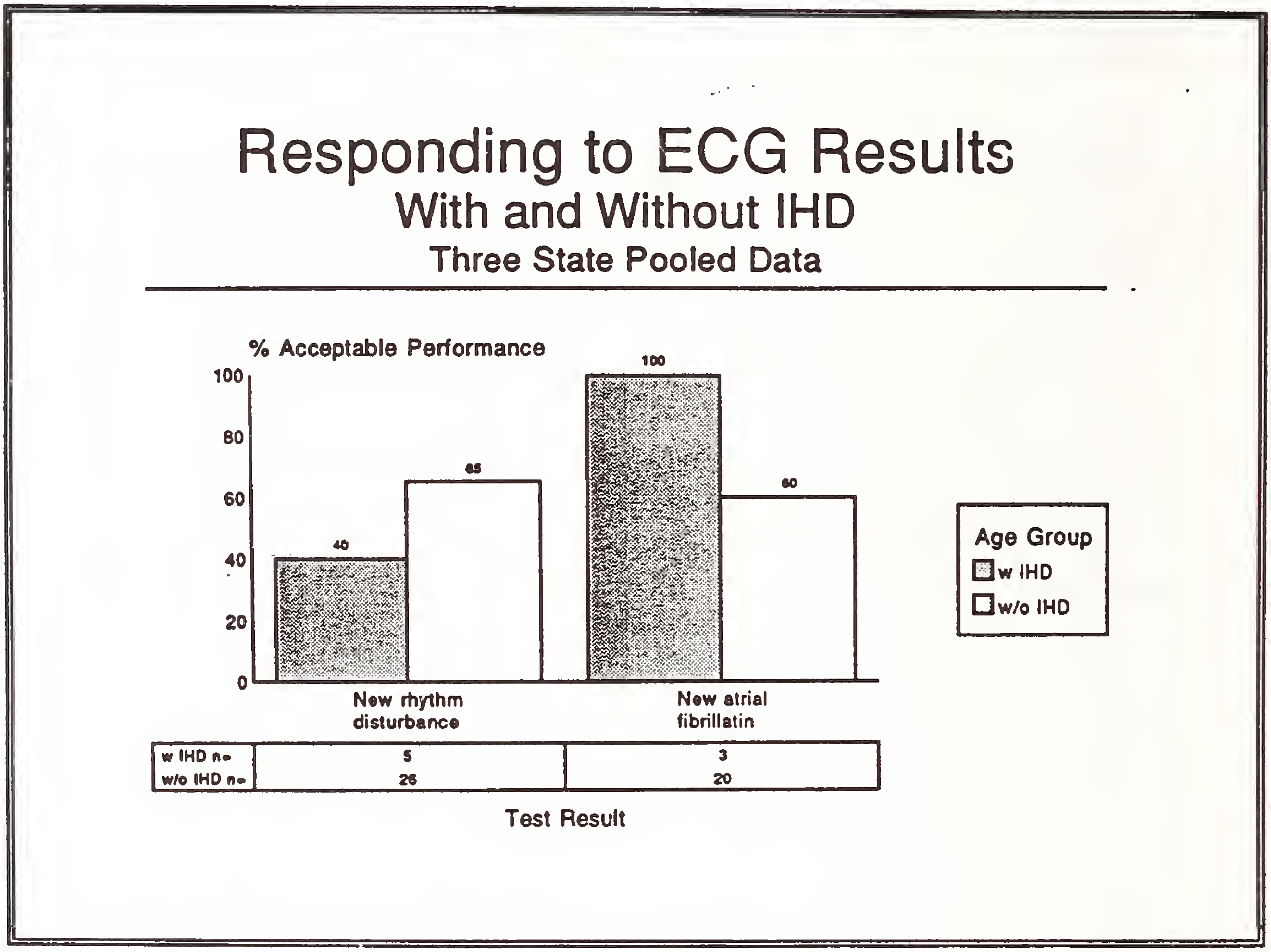
CODE: 03 CHOLESTEROL - TOTAL CHOLESTEROL >240

Indicator	Criterion	Your Rates		Peer Group Rates	
		Number of Patients	Percent Acceptable Performance	Average Number of Patients per Physician	Average Percent Acceptable Performance
Test Indications	Tests ordered appropriately for: **Conditions:** Once q. 2 yrs - Family hypercholesterolemia, IHD, HTN, diuretics (incr.LDL), B-blockers (decr.HDL), diabetes	1	100%	4.0	90%
Test Urgent Response	NA				
Test Response	Overall score:	0	%	3.3	30%
	Abnormal test results appropriately followed up:				
	Total cholesterol >240 and new abnorm: Within 3 mos retest, and if still ≥240, begin diet advice. Retest within 6 mos.	0	%	1.3	44%
	Total cholesterol >240 and old abnorm: Within 3 mos check fasting HDL, total chol. and triglycerides, bl. glu., and thyroid func. Retest within 4 mos. If ≤75 yrs and if value remains high, check diet.	0	%	2.0	23%

ECG

The table on the opposite page displays the results of the review of those patients with abnormal ECG tests, with comparisons to your specialty. The three test indicators are shown in the far left column. The next column presents the specific criteria used to evaluate the quality of care. The full text of the criteria with medical references is given in the DEMPAQ Self-Assessment Workbook. The remaining columns show your performance rates on the criteria compared to your specialty group rates.

The figure below shows statewide data for patients with abnormal ECG tests.



CLINICAL ITEM REPORT - Tests
Review Period: July 1, 1989 - June 30, 1991

ID Number:
Peer Group: General Practice

CODE: 10 **ECG**

Indicator	Criterion	Your Rates		Peer Group Rates	
		Number of Patients	Percent Acceptable Performance	Average Number of Patients per Physician	Average Percent Acceptable Performance
Test Indications	Tests ordered appropriately for: **Conditions:** Not routine except with DM, HTN, CHF, cor. artery disease, intrinsic renal disease, valv. heart disease, arrhythmias, metabolic derangements, HTN, DM, PVD, preop eval., tricyclic antidepressants, CHF.	3	100%	3.2	83%
Test Urgent Response	Patient referred to hospital or ER for lab values: On ECG, new findings of acute ischemic changes, 2nd or 3rd deg. heart block, severe metabolic derangements, multifocal ventricular premature beats, or ventricular tachycardia.	1	100%	0.2	100%
Test Response	Overall score:	0	%	0.2	50%
	Abnormal test results appropriately followed up:				
	If new onset rhythm dist.: Within 1 wk, if on drugs that affect rhythm or serum pot., then decr. or remove. Do Holter monitor or note why not needed. If Holter conf. abnorm., start treatment or req. consult or refer to cardiology within 1 wk.	0	%	0.1	50%
	If new atrial fib.: Within 1 day, if on drugs that affect rhythm or serum pot., decr. or remove. Check thyroid, heart, temperature, and lung exam. If fib. persists more than 2 days, start anticoagulants and document decision re attempt to convert to normal sinus rhythm or req. consult or referral.	0	%	0.1	50%
	If new metabolic changes on ECG: Within 2 days check serum pot. or serum calcium. If on meds that affect serum pot. and serum calcium, decr. or disc. Treat and retest in 1 wk.	0	%	0.0	%

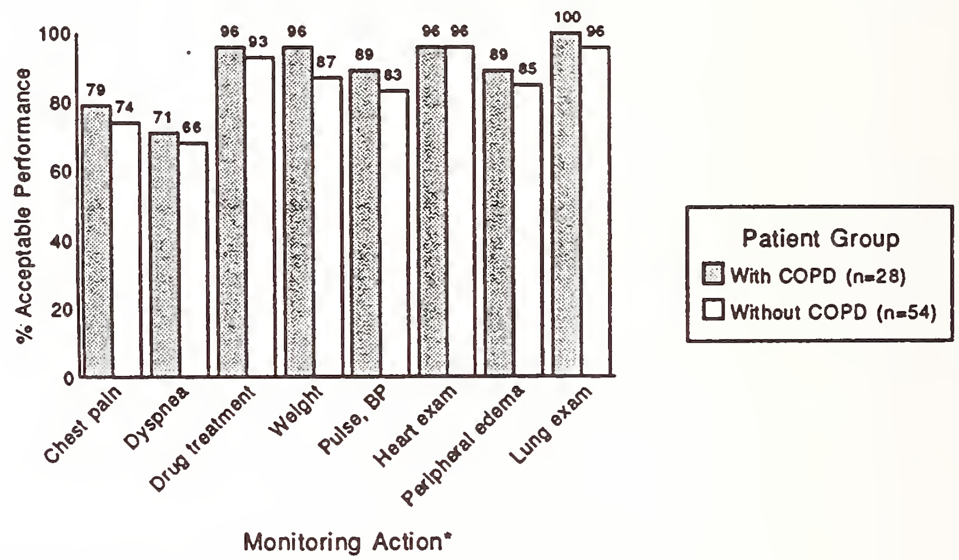
CONGESTIVE HEART FAILURE

CONGESTIVE HEART FAILURE

The table on the opposite page displays the results of the review of your congestive heart failure patients' charts with comparisons to your specialty. The three diagnosis indicators are shown in the far left column. The next column presents the specific criteria used to evaluate the quality of care. The full text of the criteria with medical references is given in the DEMPAQ Self-Assessment Workbook. The remaining columns show your performance rates on the criteria compared to your specialty group rates.

The figure below shows statewide data for patients with congestive heart failure.

Monitoring Congestive Heart Failure
With and Without co-morbid COPD



*All monitoring actions were to be performed at least once in the two year review period

CLINICAL ITEM REPORT - Diagnosis
Review Period: July 1, 1989 - June 30, 1991

ID Number:
Peer Group: General Practice

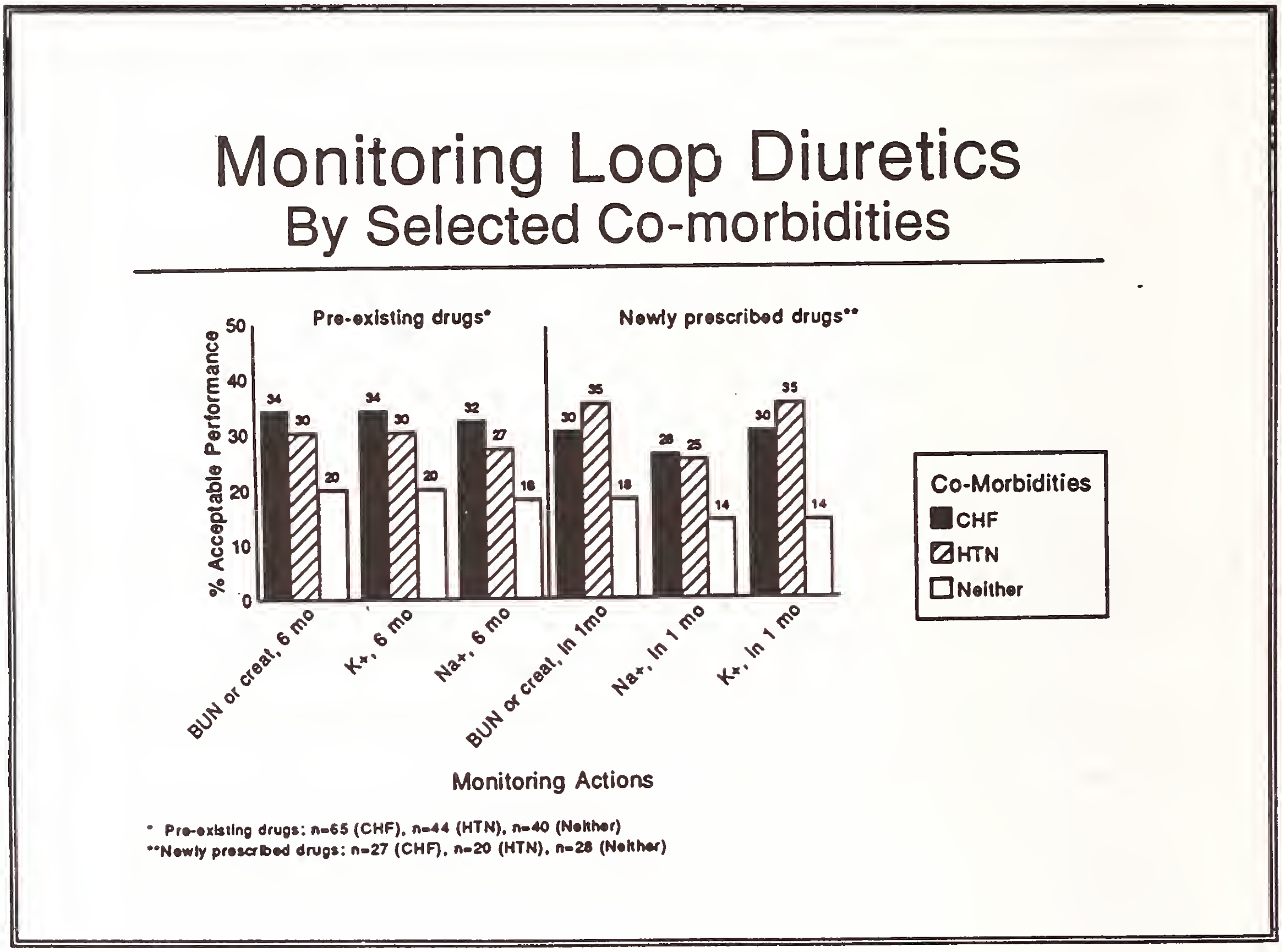
CODE: 06 **CONGESTIVE HEART FAILURE**

Indicator	Criterion	Your Rates		Peer Group Rates	
		Number of Patients	Percent Acceptable Performance	Average Number of Patients per Physician	Average Percent Acceptable Performance
Old Diagnosis Monitoring	Overall Score		%	0.7	89%
	Chest pain - once		%	0.7	89%
	Dyspnea, decr. tolerance of exertion - once		%	0.7	78%
	Document drug treatment - once		%	0.7	100%
	Weight (or history of weight gain) - once		%	0.7	89%
	Pulse, BP - once		%	0.7	89%
	Heart exam - once		%	0.7	89%
	Peripheral edema		%	0.7	89%
	Lung exam		%	0.7	89%
Evidence for a New Diagnosis	S3, pulm. rales, raised JVP and/or pedal edema, enlarged heart **OR** left ventricular ejection fraction <40% **OR** signs of CHF on chest x-ray		%	1.0	38%
Search for Treatable Causes	HTN **AND** valvular heart disease **AND** AMI **AND** drug role **AND** anemia **AND** statement re thyroid disease		%	0.9	75%

Loop Diuretic

The table on the opposite page displays the results of the review of those patients on loop diuretics, with comparisons to your specialty. The five drug indicators are shown in the far left column. The next column presents the specific criteria used to evaluate the quality of care. The full text of the criteria with medical references is given in the DEMPAQ Self-Assessment Workbook. The remaining columns show your performance rates on the loop diuretic criteria compared to your specialty group rates.

The figure below shows statewide data for patients taking loop diuretics.



Monitoring Loop Diuretics
By Selected Co-morbidities

* Pre-existing drugs: n=65 (CHF), n=44 (HTN), n=40 (Neither)
**Newly prescribed drugs: n=27 (CHF), n=20 (HTN), n=28 (Neither)

Drugs within this class

Generic	Trade
Bumetanide	Bumex
Ethacrynic Acid	Edecrin
Furosemide	Lasix

CLINICAL ITEM REPORT - Drugs
Review Period: July 1, 1989 - June 30, 1991

ID Number:
Peer Group: General Practice

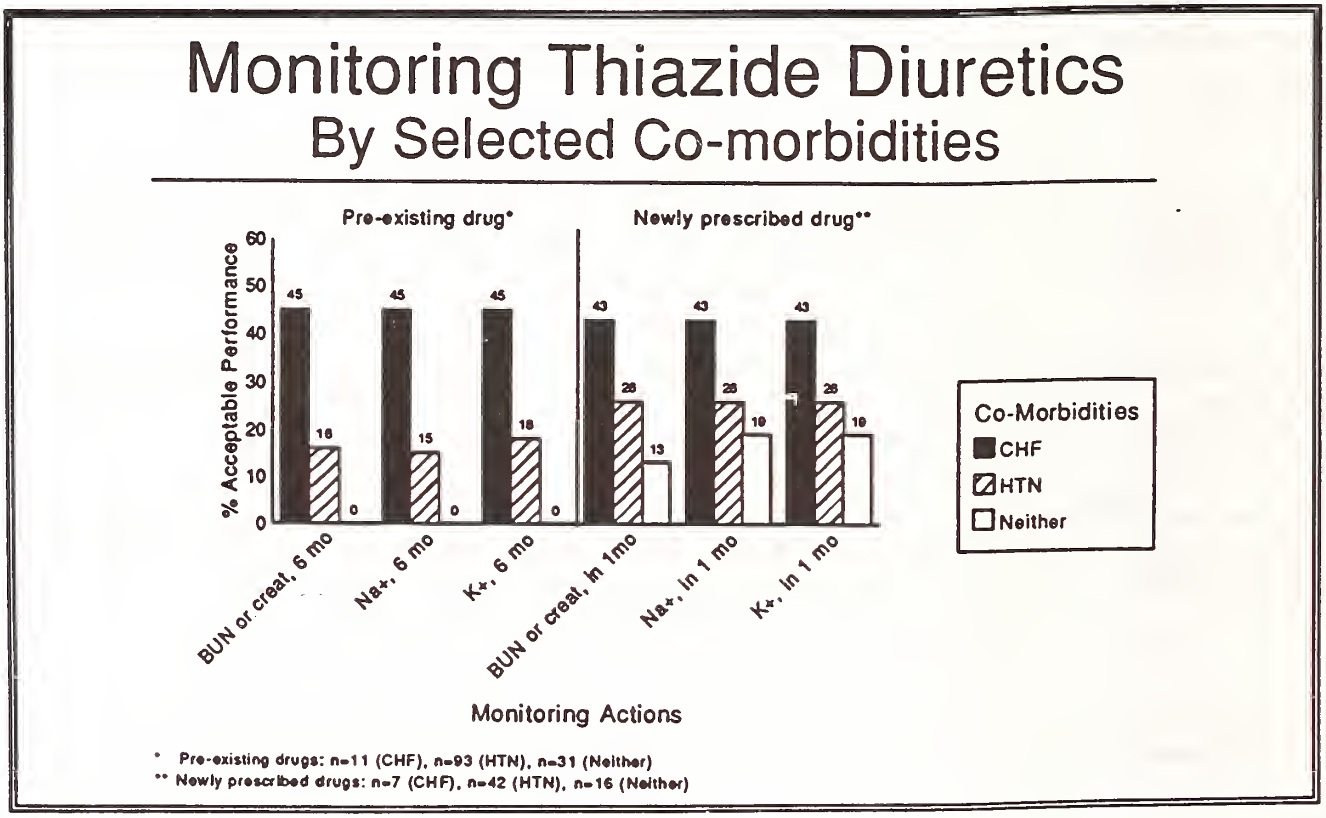
CODE: 08 **DIURETIC - LOOP**

Indicator	Criterion	Your Rates		Peer Group Rates	
		Number of Patients	Percent Acceptable Performance	Average Number of Patients per Physician	Average Percent Acceptable Performance
Dose and Frequency	Both dose and frequency documented	3	100%	2.6	94%
	Dose Documented	3	100%	2.6	94%
	Frequency Documented	3	100%	2.6	99%
Drug Indications	Drug prescribed appropriately for: Edema/pulm. edema, HTN, hypercalcemia	1	100%	1.1	93%
Condition Contraindications	No contraindications or use of drug justified despite contraindications: **Risk/benefit:** BUN >50 or creat. >2.5	3	100%	2.6	98%
Drug Contraindications	No contraindications or use of drug justified despite contraindications: **Absolute: Lithium** **Risk/benefit:** Long-term, high-dose corticosteroid	3	100%	2.6	100%
Drug Monitoring	Overall Monitoring Score	3	0%	2.1	7%
	Old Drugs:				
	BUN or creat. - q. 6 mos	2	0%	1.1	7%
	K+ q. - 6 mos	2	0%	1.1	0%
	Na+ q. - 6 mos	2	0%	1.1	0%
	If diabetes - bl. glucose q. 3 mos	0	%	0.4	17%
	If on lithium - lithium levels q. 3 mos	0	%	0.0	%
	New Drugs:				
	BUN or creat. - within 1 mo start of therapy	1	0%	1.0	8%
	Na+ - within 1 mo start of therapy	1	0%	1.0	4%
	K+ - within 1 mo start of therapy	1	0%	1.0	8%
	If diabetes -bl.glu.within 3 mos start therapy	0	%	0.2	50%
	If on lithium - lithium levels within 3 mos start of therapy	0	%	0.0	%

THIAZIDE DIURETICS

The table on the opposite page displays the results of the review of those patients on thiazide diuretics with comparison to your specialty. The five drug indicators are shown in the far left column. The next column presents the specific criteria used to evaluate the quality of care. The full text of the criteria with medical references is given in the DEMPAQ Self-Assessment Workbook. The remaining columns show your performance rates on the thiazide diuretic criteria compared to your specialty group rates.

The figure below shows statewide data for patients taking a thiazide diuretic.



* Pre-existing drugs: n=11 (CHF), n=93 (HTN), n=31 (Neither)
** Newly prescribed drugs: n=7 (CHF), n=42 (HTN), n=16 (Neither)

Drugs within this class

Generic	Trade
Bendroflumethiazide	Naturetin
Benzthiazide	Exna, Hydrex
Chlorothiazide	Diuril
Chlorthalidone	Hygroton, Thalitone
Cyclothiazide	Anhydron, Fluidil
Hydrochlorothiazide	Esidrix, Hydrodiuril, Oretic
Hydroflumethiazide	Diucardin, Saluron
Indapamide	Lozol
Methyclothiazide	Aquatensen, Enduron
Methyclothiazide + Enduronyl	Enduronyl
Metolazone	Diulo, Zaroxolyn
Polythiazide	Renese
Quinethazone	Hydromox
Trichlormethiazide	Metahydrin, Naqua

CLINICAL ITEM REPORT - Drugs
Review Period: July 1, 1989 - June 30, 1991

ID Number:
Peer Group: General Practice

CODE: 10 **DIURETIC - THIAZIDE-TYPE**

Indicator	Criterion	Your Rates		Peer Group Rates	
		Number of Patients	Percent Acceptable Performance	Average Number of Patients per Physician	Average Percent Acceptable Performance
Dose and Frequency	Both dose and frequency documented	1	100%	3.0	90%
	Dose Documented	1	100%	3.0	97%
	Frequency Documented	1	100%	3.0	90%
Drug Indications	Drug prescribed appropriately for: Edema/pulm. edema, HTN, diabetes insipidus, renal calculi	0	%	0.9	94%
Condition Contraindications	No contraindications or use of drug justified despite contraindications: **Absolute:** Renal imp. (BUN>50 or creat.>2.5), hypercalcemia (cal.>12). **Risk/benefit:** Gout, impaired hepatic function, systemic lupus erythematosus	1	100%	3.0	97%
Drug Contraindications	No contraindications or use of drug justified despite contraindications: **Absolute:** None **Risk/benefit:** Oral antidiab. agents, insulin, long-term high-dose corticosteroid therapy	1	100%	3.0	88%
Drug Monitoring	Overall Monitoring Score	0	%	2.6	22%
	Old Drugs:				
	BUN or creat. - q. 6 mos	0	%	1.7	7%
	Na+ - q. 6 mos	0	%	1.7	7%
	K+ - q. 6 mos	0	%	1.7	7%
	If impaired liver function - K+ q. 3 mos	0	%	0.0	%
	If on lithium - lithium levels q. 3 mos	0	%	0.0	%
	If diabetes - bl. glucose q. 3 mos	0	%	0.5	56%
	If on long-term corticosteroid - K+ q.3 mos	0	%	0.0	0%

(cont'd)

CLINICAL DETAIL REPORT - DRUGS
CODE: 10

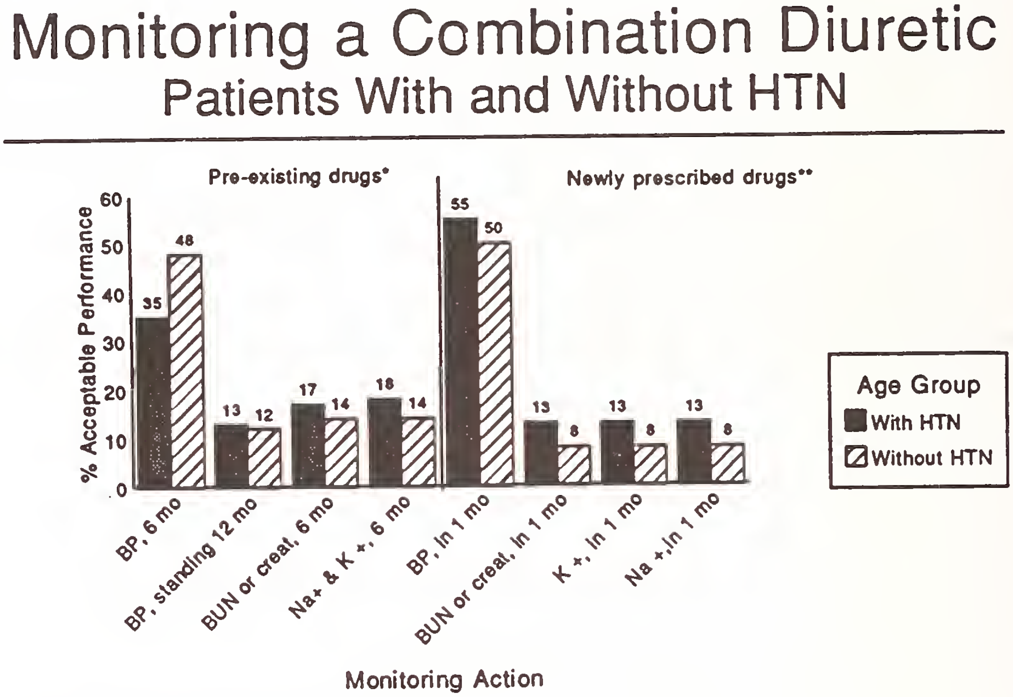
DIURETIC - THIAZIDE-TYPE

		Your Rates		Peer Group Rates	
Indicator	Criterion	Number of Patients	Percent Acceptable Performance	Average Number of Patients per Physician	Average Percent Acceptable Performance
	New Drugs:				
	BUN or creat. - within 1 mo start of therapy	0	%	0.8	20%
	Na+ - within 1 mo	0	%	0.8	20%
	K+ - within 1 mo	0	%	0.8	20%
	If diabetes - bl. glucose within 3 mos start of therapy	0	%	0.1	100%
	If on lithium - lithium levels within 3 mos start of therapy	0	%	0.0	%
	If on long-term corticosteroid - serum pot. within 3 mos start of therapy	0	%	0.0	%
	If impaired liver function - K+ and Na+ within 3 mos start of therapy	0	%	0.0	0%

THIAZIDE DIURETIC + POTASSIUM SPARING DIURETIC

The table on the opposite page displays the results of the review of those patients on combination diuretic therapy with comparison to your specialty. The five drug indicators are shown in the far left column. The next column presents the specific criteria used to evaluate the quality of care. The full text of the criteria with medical references is given in the DEMPAQ Self-Assessment Workbook. The remaining columns show your performance rates on the criteria compared to your specialty group rates.

The figure below shows statewide data for patients taking this combination drug.



* Pre-existing drugs: n=66 (HTN), n=47 (w/o HTN)

** Newly prescribed drugs: n=29 (HTN), n=13 (w/o HTN)

Drugs within this class

Generic	Trade
Hydrochlorothiazide + Amiloride	Moduretic
Hydrochlorothiazide + Spironolactone	Aldactazide
Hydrochlorothiazide + Triamterene	Dyazide, Maxizide

CLINICAL ITEM REPORT - Drugs
Review Period: July 1, 1989 - June 30, 1991

ID Number:
Peer Group: General Practice

CODE: 18 **COMBINATION: DIURETIC (THIAZIDE-TYPE) + POTASSIUM-SPARING-TYPE**

		Your Rates		Peer Group Rates	
Indicator	**Criterion**	**Number of Patients**	**Percent Acceptable Performance**	**Average Number of Patients per Physician**	**Average Percent Acceptable Performance**
Dose and Frequency	Both dose and frequency documented	6	100%	2.6	85%
	Dose Documented	6	100%	2.6	85%
	Frequency Documented	6	100%	2.6	86%
Drug Indications	Drug prescribed appropriately for: Edema/pulm. edema, HTN, diabetes insipidus, renal calculi, CHF	1	0%	0.5	72%
Condition Contraindications	No contraindications or use of drug justified despite contraindications: **Absolute:** Renal impairment (BUN >50 or creat. >2.5) **Risk/benefit:** Hypercalcemia, hyperkalemia, gout, impaired hepatic function, systemic lupus erythematosus	6	100%	2.6	98%
Drug Contraindications	No contraindications or use of drug justified despite contraindications: **Absolute:** Oral potassium supp., ACE inhibitors **Risk/benefit:** Oral anti-diabetic agents, insulin, long-term high-dose corticosteroid therapy	6	100%	2.6	78%
Drug Monitoring	Overall Monitoring Score	6	25%	2.2	32%
	Old Drugs:				
	BP - q. 6 mos, regular	5	60%	1.8	57%
	BP - q. 12 mos, standing	5	20%	1.6	22%
	BUN or creat. - q. 6 mos	5	20%	1.8	29%
	K+ and Na+ - q. 6 mos	5	20%	1.8	32%
	If on lithium - lithium levels q. 3 mos	0	%	0.0	%
	If diabetes - bl. glucose q. 3 mos	0	%	0.3	25%

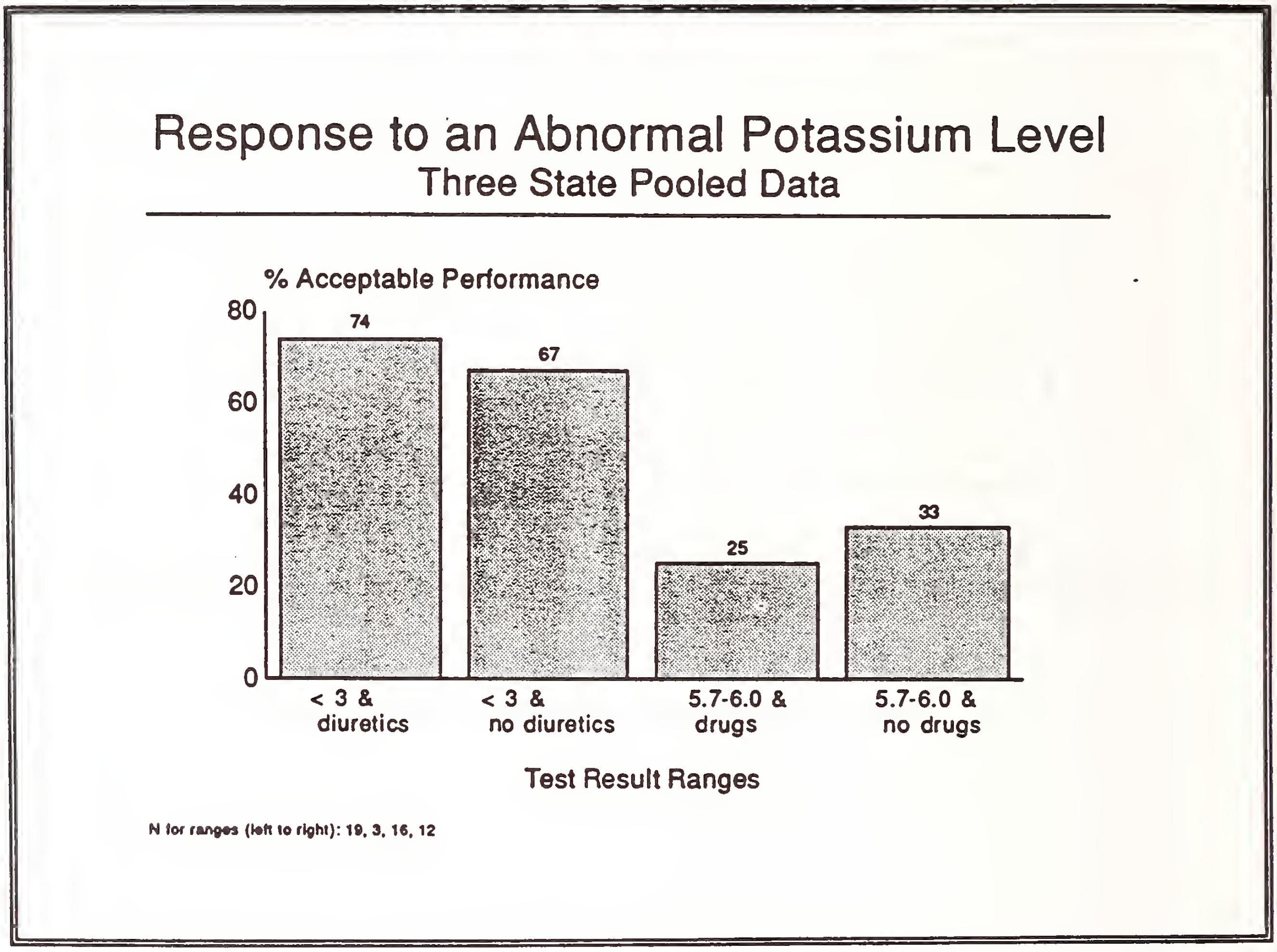
(cont'd)

Indicator	Criterion	Your Rates		Peer Group Rates	
		Number of Patients	Percent Acceptable Performance	Average Number of Patients per Physician	Average Percent Acceptable Performance
	If on steroids - K+ q. 3 mos	0	%	0.0	%
	If impaired liver function - K+ and Na+ q. 3 mos	0	%	0.0	%
	New Drugs:				
	BP - within 1 mo start of therapy	1	0%	0.4	44%
	BUN or creat. - within 1 mo start of therapy	1	0%	0.4	13%
	K+ - within 1 mo	1	0%	0.4	13%
	Na+ - within 1 mo	1	0%	0.4	13%
	If diabetes - bl. glucose within 3 mos start of therapy	0	%	0.1	0%
	If on corticosteroid - K+ within 3 mos start of therapy	0	%	0.0	%
	If on lithium - lithium levels within 3 mos start of therapy	0	%	0.0	%
	If impaired liver function - K+ and Na+ within 3 mos start of therapy	0	%	0.0	%

POTASSIUM

The table on the opposite page displays the results of the review of those patients with abnormal potassium tests, with comparisons to your specialty. The three test indicators are shown in the far left column. The next column presents the specific criteria used to evaluate the quality of care. The full text of the criteria with medical references is given in the DEMPAQ Self-Assessment Workbook. The remaining columns show your performance rates on the criteria compared to your specialty group rates.

The figure below shows three state (Maryland, Iowa, Alabama) combined data for patients with abnormal serum potassium levels.



CLINICAL ITEM REPORT - Tests
Review Period: July 1, 1989 - June 30, 1991

ID Number:
Peer Group: General Practice

CODE: 04

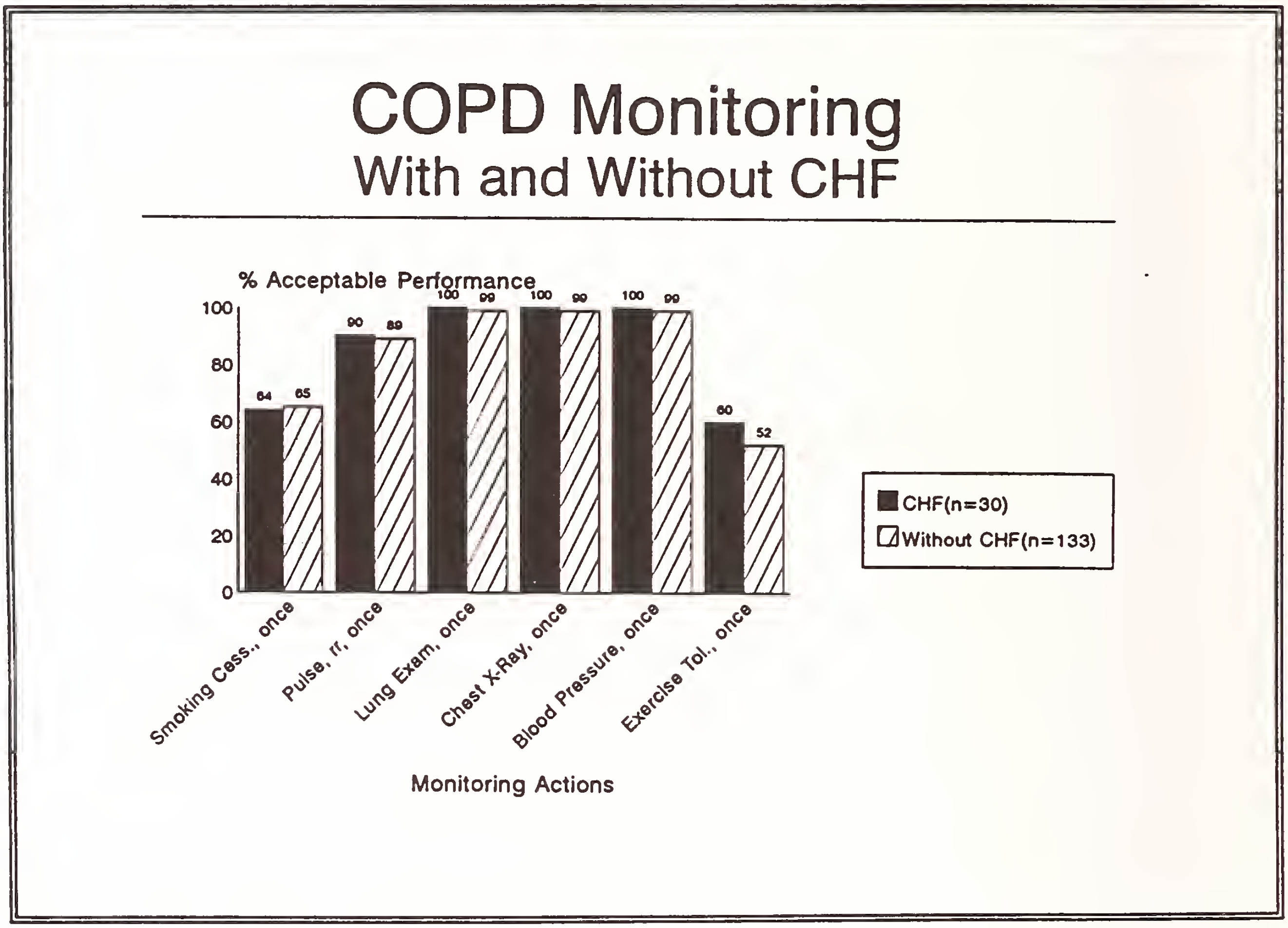
POTASSIUM (SERUM LEVEL) K+ <3 OR K+ >5.7

Indicator	Criterion	Your Rates: Number of Patients	Your Rates: Percent Acceptable Performance	Peer Group Rates: Average Number of Patients per Physician	Peer Group Rates: Average Percent Acceptable Performance
Test Indications	Tests ordered appropriately for: **Conditions:** Diuretic therapy, digoxin therapy, pot. therapy, heart disease, renal disease, hyperaldosteronism, DM, ACE inh. therapy, corticosteroid therapy, dizziness, muscle cramps, myalgias, polyuria, ECG changes suggestive of hyperkalemia, chron. fatigue		%	1.0	100%
Test Urgent Response	Patient referred to hospital or ER for lab values: If serum pot. >6.0 and ECG changes, if <2.5 and ECG changes		%	0.0	%
Test Response	Overall score:		%	1.0	50%
	Abnormal test results appropriately followed up:				
	Serum pot. <3.0 on diuretics (except pot.-sparing) or on long-term, high-dose corticosteroids: Within 1 wk decr. or disc. hypokalemia-inducing drugs **OR** add oral pot. repl. therapy, **AND/OR** change to pot.-sparing diuretics. Retest within 1 mo.		%	0.0	%
	Serum pot. <3.0 not on diuretics or hypokalemia-inducing drugs: Within 1 wk check history of chron. diarrhea, enema use, laxative abuse, chron. alcohol. Check serum electrolytes, urine pot., and chloride. Review results within 1 wk.		%	0.5	0%
	Serum pot. 5.7-6.0 on ACE inh., NSAIDs, pot.-sparing diuretics, or pot. supplement therapy: Within 2 days decr. or disc. drugs if appropriate. Retest within 2 wks.		%	0.5	100%
	Serum pot. 5.7-6.0 not on ACE inh., NSAIDs, pot.-sparing diuretics, or pot. supplement therapy: Within 1 wk repeat serum electrolytes and BUN/creat. Review results within 1 wk.		%	0.0	0.0%

CHRONIC OBSTRUCTIVE PULMONARY DISEASE

The table on the opposite page displays the results of the review of your COPD patients' charts with comparisons to your specialty. The three diagnosis indicators are shown in the far left column. The next column presents the specific criteria used to evaluate the quality of care. The full text of the criteria with medical references is given in the DEMPAQ Self-Assessment Workbook. The remaining columns show your performance rates on the criteria compared to your specialty group rates.

The figure below shows statewide data for patients with chronic obstructive pulmonary disease.



CLINICAL ITEM REPORT - Diagnosis
Review Period: July 1, 1989 - June 30, 1991

ID Number:
Peer Group: General Practice

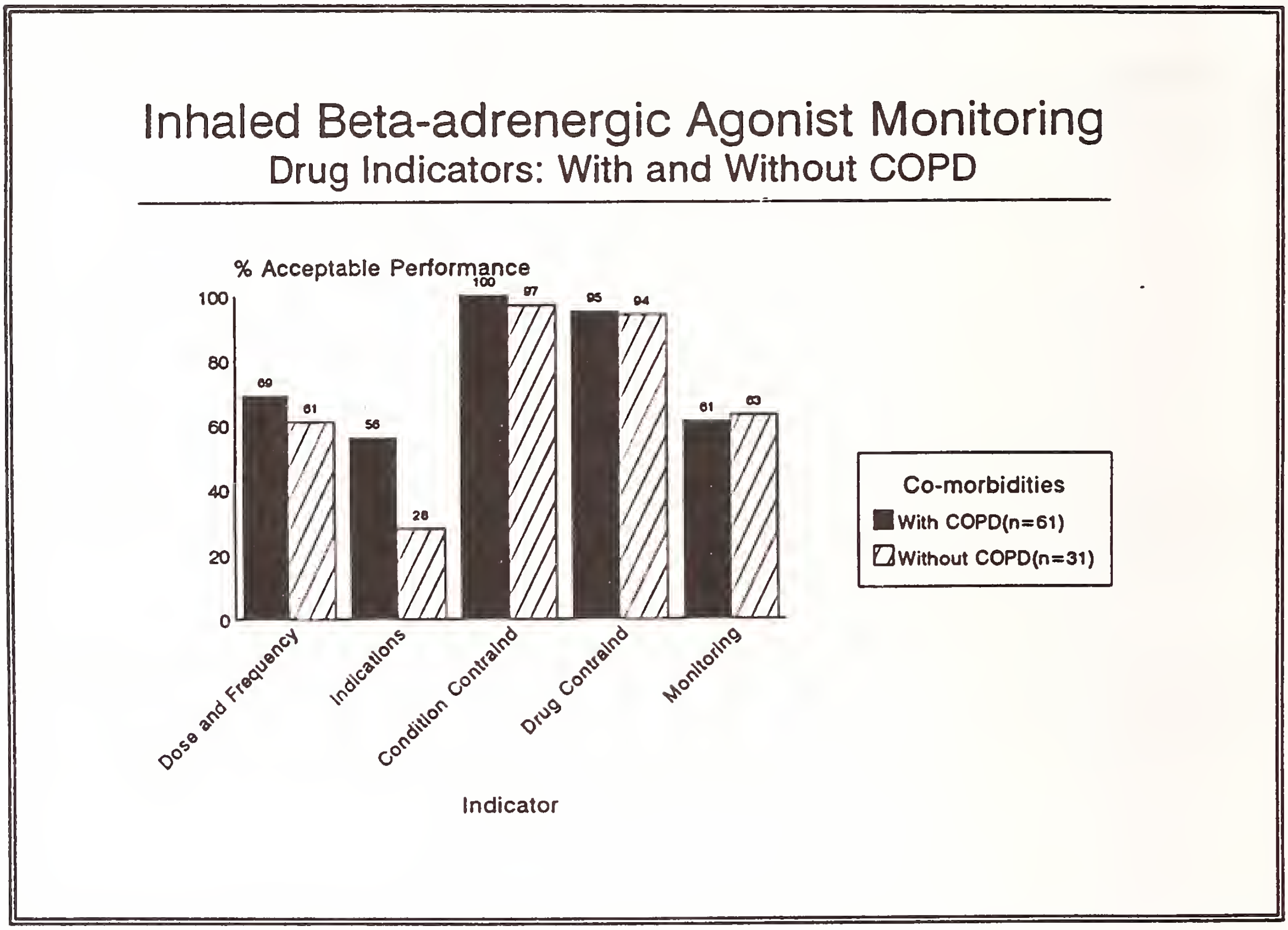
CODE: 04 CHRONIC OBSTRUCTIVE PULMONARY DISEASE

Indicator	Criterion	Your Rates		Peer Group Rates	
		Number of Patients	Percent Acceptable Performance	Average Number of Patients per Physician	Average Percent Acceptable Performance
Old Diagnosis Monitoring	Overall Score	1	50%	2.0	66%
	Check for compliance with smoking cessation (if patient is a smoker) - once	1	0%	1.5	42%
	Pulse, respiratory rate - once	1	100%	2.0	74%
	Lung exam - once	1	100%	2.0	92%
	Chest x-ray - once	1	0%	2.0	57%
	BP - once	1	100%	2.0	94%
	Tolerance of exertion - once	1	0%	2.0	32%
Evidence for a New Diagnosis	Productive cough lasting 3 mos for 2 consecutive yrs AND dyspnea on exertion with or w/o wheezing OR decr. forced expiratory volume (1 second)	0	%	0.9	16%
Search for Treatable Causes	Smoking or environmental precipitant	0	%	0.8	44%

INHALED BETA-ADRENERGIC AGONIST

The table on the opposite page displays the results of the review of those patients using beta-adrenergic agonist inhalers, with comparison to your specialty. The five drug indicators are shown in the far left column. The next column presents the specific criteria used to evaluate the quality of care. The full text of the criteria with medical references is given in the DEMPAQ Self-Assessment Workbook. The remaining columns show your performance rates on the criteria compared to your specialty group rates.

The figure below shows statewide data for patients using beta-adrenergic agonist inhalers.



Drugs within this class

Generic	Trade
Albuterol	Proventil, Ventolin
Bitolterol	Tornalate
Epinephrine	Bronkaid Mist, Primatene Mist
Ethylnorepinephrine	Bronkephrine
Isoetharine	Bronkosol, Bronkometer
Isoproterenol	Aerolone, Isuprel
Isoproterenol+Phenylephrine	Duo-Medihaler
Metaproterenol	Alupent, Metaprel
Pirbuterol	Maxair
Racepinephrine	Asthma Nephrin
Terbutaline	Brethaire, Brethine, Bricanyl

CLINICAL ITEM REPORT - Drugs
Review Period: July 1, 1989 - June 30, 1991

ID Number:
Peer Group: General Practice

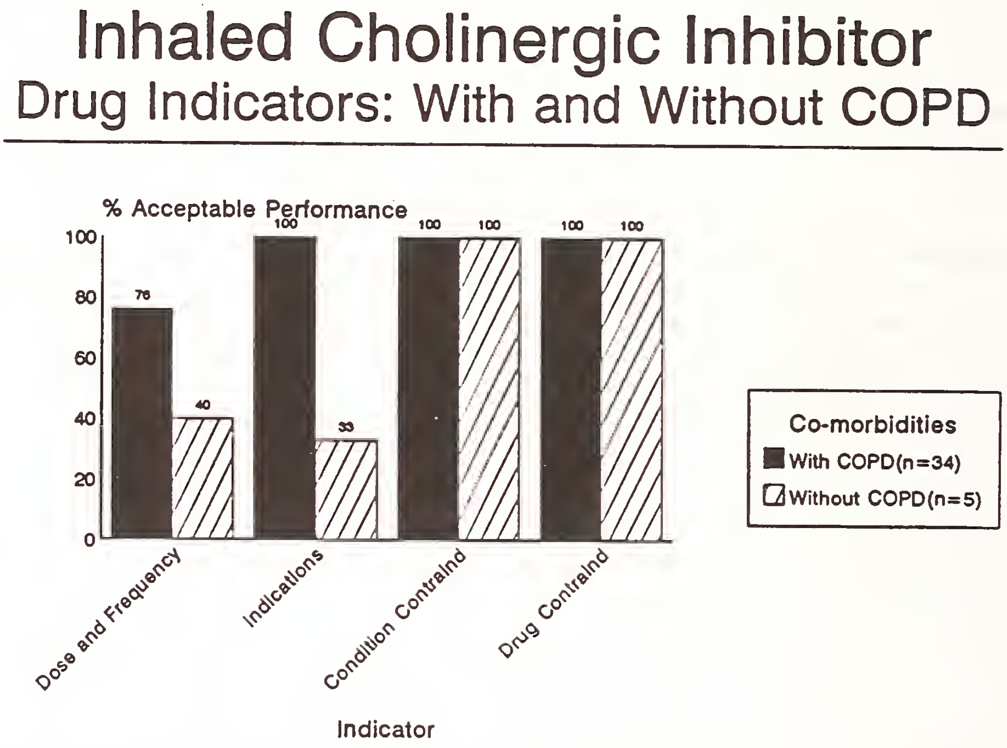
CODE: 51 **BETA-ADRENERGIC AGONIST (ADRENERGIC BRONCHODILATOR) - INHALED**

Indicator	Criterion	Your Rates		Peer Group Rates	
		Number of Patients	Percent Acceptable Performance	Average Number of Patients per Physician	Average Percent Acceptable Performance
Dose and Frequency	Both dose and frequency documented		%	1.2	68%
	Dose Documented		%	1.2	68%
	Frequency Documented		%	1.2	77%
Drug Indications	Drug prescribed appropriately for: Bronch. asthma, bronchiectasis, chron. bronch., and emphysema		%	0.4	50%
Condition Contraindications	No contraindications or use of drug justified despite contraindications: **Absolute:** Coronary artery disease, HTN, hyperthyroidism, cerebral insufficiency, chron. lung disease **Risk/benefit:** Patients >70 yrs		%	1.2	100%
Drug Contraindications	No contraindications or use of drug justified despite contraindications: **Absolute:** Monoamine oxidase inh., guanethidine **Risk/benefit:** Beta-adrenergic blockers		%	1.2	91%
Drug Monitoring	Overall Monitoring Score		%	1.0	44%
	Old Drugs:				
	Lung exam - q. 6 mos		%	0.7	36%
	New Drugs:				
	Lung exam - within 1 mo start of therapy		%	0.3	67%

CHOLINERGIC INHIBITOR

The table on the opposite page displays the results of the review of those patients taking a cholinergic inhibitor, with comparison to your specialty. The five drug indicators are shown in the far left column. The next column presents the specific criteria used to evaluate the quality of care. The full text of the criteria with medical references is given in the DEMPAQ Self-Assessment Workbook. The remaining columns show your performance rates on the criteria compared to your specialty group rates.

The figure below shows statewide data for patients on a cholinergic inhibitor.



Drugs within this class

Generic	Trade
Ipratropium	Atrovent

CLINICAL ITEM REPORT - Drugs
Review Period: July 1, 1989 - June 30, 1991

ID Number:
Peer Group: General Practice

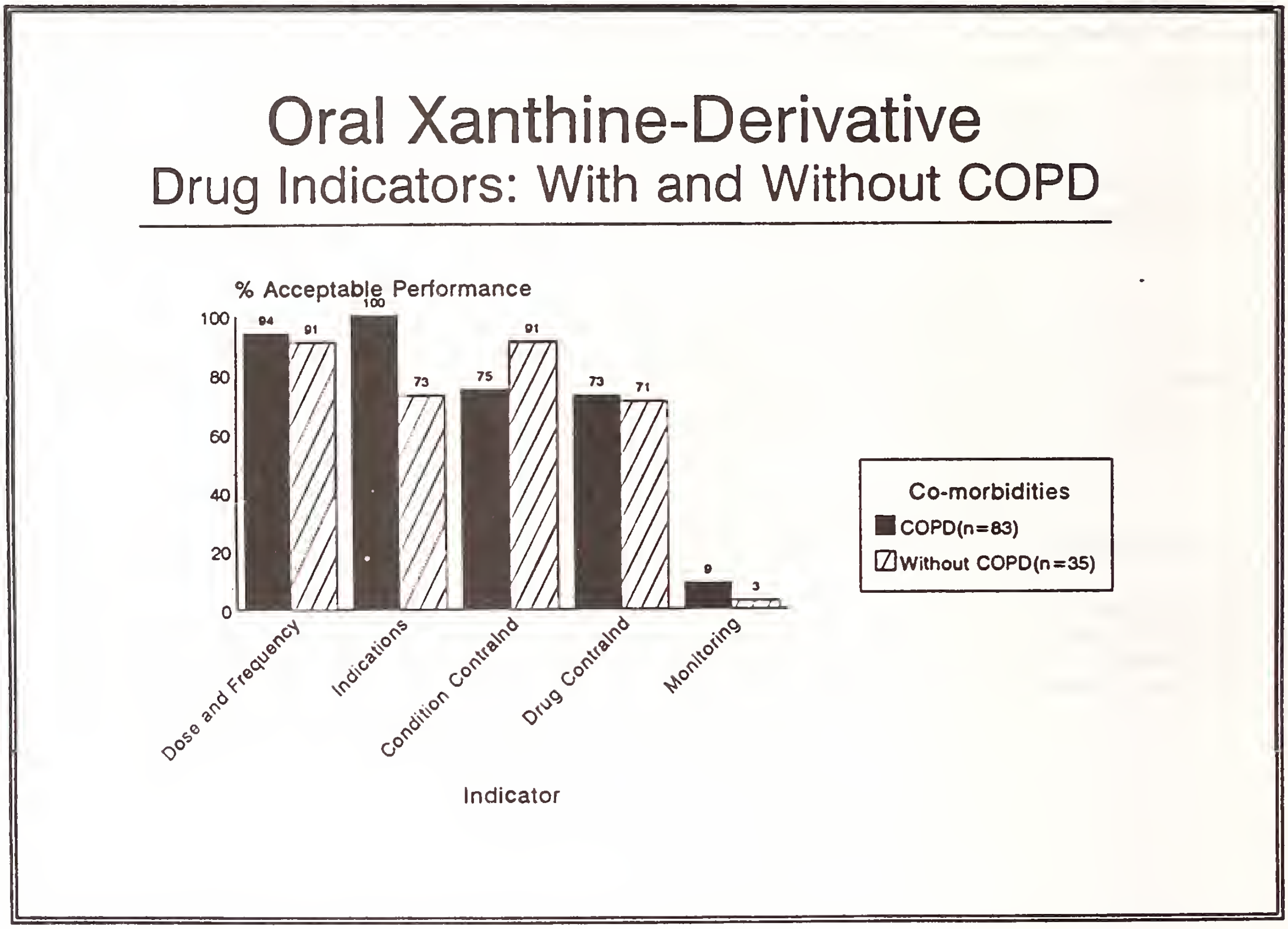
CODE: 52 CHOLINERGIC INHIBITOR (INHALATION-LOCAL)

		Your Rates		Peer Group Rates	
Indicator	**Criterion**	Number of Patients	Percent Acceptable Performance	Average Number of Patients per Physician	Average Percent Acceptable Performance
Dose and Frequency	Both dose and frequency documented		%	1.2	58%
	Dose Documented		%	1.2	92%
	Frequency Documented		%	1.2	67%
Drug Indications	Drug prescribed appropriately for: Emphysema, COPD, bronch. asthma only if beta-adrenergics and xanthines fail		%	0.8	88%
Condition Contraindications	No contraindications or use of drug justified despite contraindications: **Absolute:** None **Risk/benefit:** Glaucoma, urinary retention		%	1.2	100%
Drug Contraindications	NA				
Drug Monitoring	NA				

Oral Xanthine Derivative

The table on the opposite page displays the results of the review of those patients on an oral xanthine derivative with comparison to your specialty. The five drug indicators are shown in the far left column. The next column presents the specific criteria used to evaluate the quality of care. The full text of the criteria with medical references is given in the DEMPAQ Self-Assessment Workbook. The remaining columns show your performance rates on the criteria compared to your specialty group rates.

The figure below shows statewide data for patients on an oral xanthine derivative.



Drugs within this class

Generic	Trade
Aminophylline	Somophyllin
Dyphylline	Dilor, Dyflex, Lufyllin
Oxtriphylline	Choledyl
Theophylline	Aerolate, Bronkodyl, Duraphyl, Elixophyllin, Quibro, Slo-Bid, Slo-Phyllin, Somophyllin-T, Sustaire, Theo-24, Theobid, Theochron, Theo-Dur, Theolair, Uniphyl
Theophylline+Guaifenesin	Asbron G, Eliophyllin-GG, Quibron, Slo-Phyllin GG, Theolair-Plus, Theolate

CLINICAL ITEM REPORT - Drugs
Review Period: July 1, 1989 - June 30, 1991

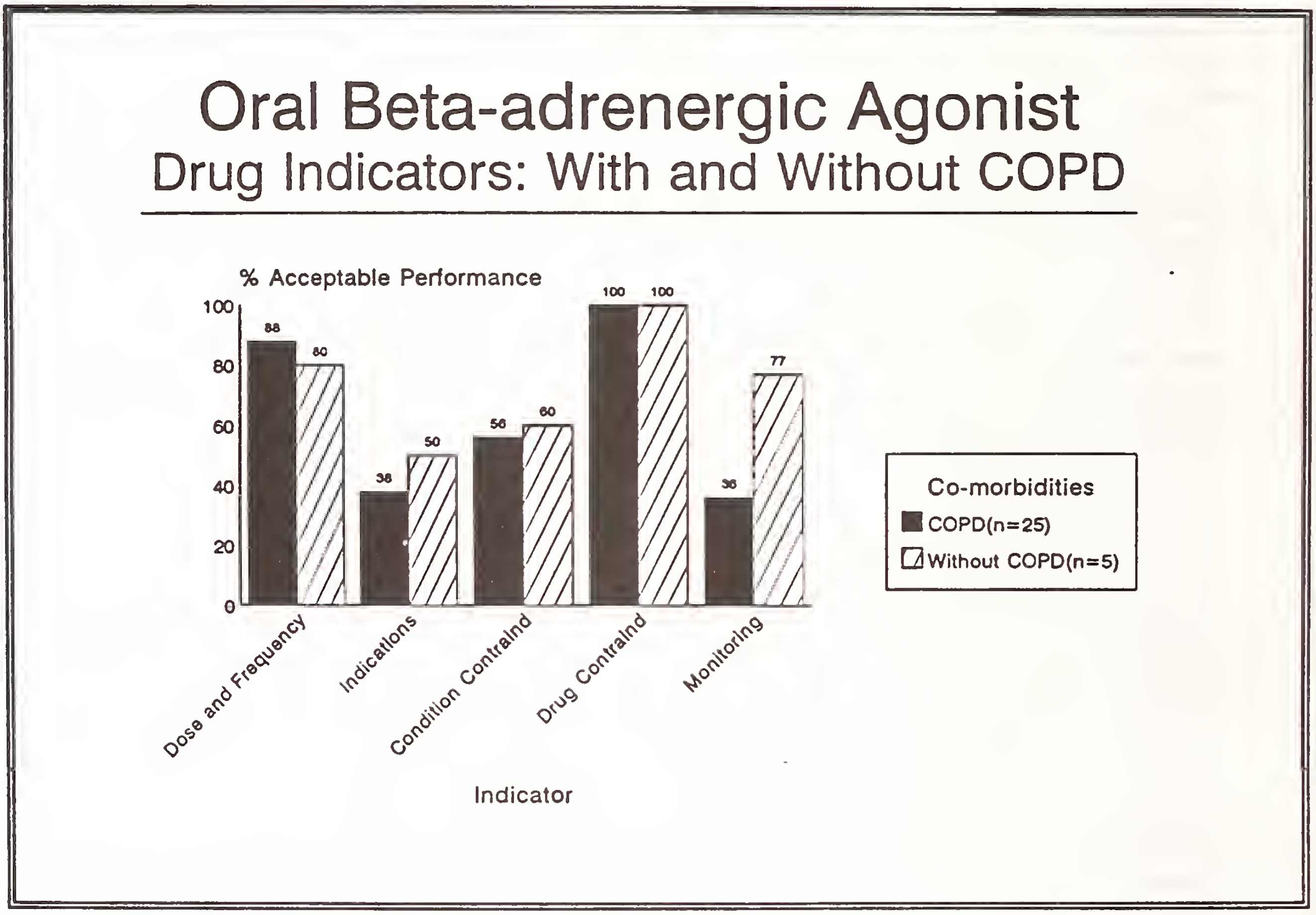
ID Number:
Peer Group: General Practice

CODE: 53 **XANTHINE-DERIVATIVE - ORAL**

Indicator	Criterion	Your Rates		Peer Group Rates	
		Number of Patients	Percent Acceptable Performance	Average Number of Patients per Physician	Average Percent Acceptable Performance
Dose and Frequency	Both dose and frequency documented	2	100%	2.0	93%
	Dose Documented	2	100%	2.0	98%
	Frequency Documented	2	100%	2.0	93%
Drug Indications	Drug prescribed appropriately for: Bronch. asthma, pulm. emphysema, chron. bronchitis	1	0%	0.9	87%
Condition Contraindications	No contraindications or use of drug justified despite contraindications: **Absolute:** None **Risk/benefit:** Gastritis or peptic ulcer, CHF, liver disease, prostatic hypertrophy, alcoholism	2	100%	2.0	76%
Drug Contraindications	No contraindications or use of drug justified despite contraindications: **Absolute:** On other xanthine derivative **Risk/benefit:** Cimetidine, erythromycin, beta blockers, furosemide, propanolol	2	50%	2.0	79%
Drug Monitoring	Overall Monitoring Score	2	0%	1.9	5%
	Old Drugs:				
	Serum theophylline - q. 3 mos	1	0%	1.0	7%
	New Drugs:				
	Serum theophylline - within 1 wk start of therapy	1	0%	0.9	0%

The table on the opposite page displays the results of the review of those patients taking an oral beta-adrenergic agonist, with comparison to your specialty. The five drug indicators are shown in the far left column. The next column presents the specific criteria used to evaluate the quality of care. The full text of the criteria with medical references is given in the DEMPAQ Self-Assessment Workbook. The remaining columns show your performance rates on the criteria compared to your specialty group rates.

The figure below shows statewide data for patients taking an oral beta-adrenergic agonist.



Drugs within this class

Generic	Trade
Albuterol	Proventil, Ventolin
Ephedrine	Vantronol
Isoproterenol (sublingual)	Aerolone, Isuprel
Metaproterenol	Alupent, Metaprel
Terbutaline	Brethaire, Brethine, Bricanyl

CLINICAL ITEM REPORT - Drugs
Review Period: July 1, 1989 - June 30, 1991

ID Number:
Peer Group: General Practice

CODE: 55 **BETA-ADRENERGIC AGONIST (ORAL)**

Indicator	Criterion	Your Rates		Peer Group Rates	
		Number of Patients	Percent Acceptable Performance	Average Number of Patients per Physician	Average Percent Acceptable Performance
Dose and Frequency	Both dose and frequency documented	1	100%	1.0	86%
	Dose Documented	1	100%	1.0	86%
	Frequency Documented	1	100%	1.0	100%
Drug Indications	Drug prescribed appropriately for: Bronch. asthma in patients who cannot use metered inhaler correctly, bronchiectasis, ephedrine not in patients >65, isoproterenol sublingual not in patients >65	1	100%	0.9	33%
Condition Contraindications	No contraindications or use of drug justified despite contraindications: **Absolute:** None **Risk/benefit:** CAD, HTN, hyperthyroidism, angina, arrhythmia	1	0%	1.0	57%
Drug Contraindications	No contraindications or use of drug justified despite contraindications: **Absolute:** MAOs, ephedrine, guanethidine-ephedrine **Risk/benefit:** Beta-adrenergic blockers	1	100%	1.0	100%
Drug Monitoring	Overall Monitoring Score	1	100%	1.0	38%
	Old Drugs:				
	Lung exam - q. 6 mos	0	%	0.1	100%
	Pulse - q. 6 mos	0	%	0.1	100%
	BP - q. 6 mos, alternating standing and regular	0	%	0.1	0%

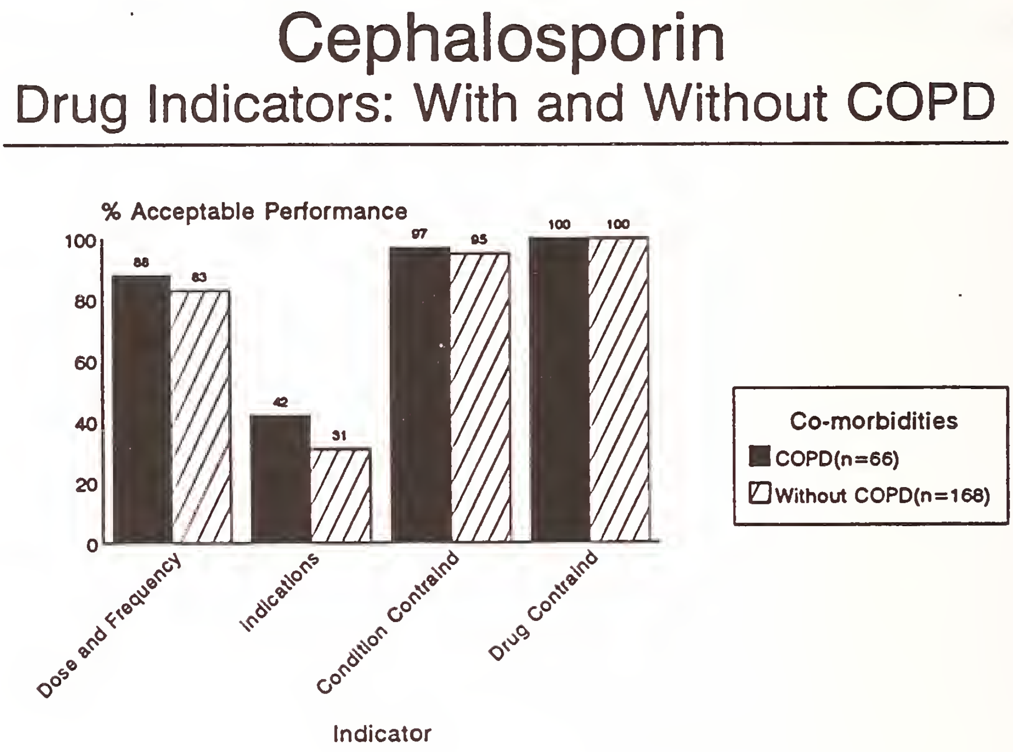
(cont'd)

Indicator	Criterion	Your Rates		Peer Group Rates	
		Number of Patients	Percent Acceptable Performance	Average Number of Patients per Physician	Average Percent Acceptable Performance
	New Drugs:				
	Lung exam - within 1 mo	1	100%	0.9	33%
	Pulse - within 1 mo	1	100%	0.9	33%
	BP - within 1 mo	1	100%	0.9	33%

CEPHALOSPORIN

The table on the opposite page displays the results of the review of those patients taking a cephalosporin, with comparison to your specialty. The five drug indicators are shown in the far left column. The next column presents the specific criteria used to evaluate the quality of care. The full text of the criteria with medical references is given in the DEMPAQ Self-Assessment Workbook. The remaining columns show your performance rates on the criteria compared to your specialty group rates.

The figure below shows statewide data for patients taking a cephalosporin.


Cephalosporin
Drug Indicators: With and Without COPD

Drugs within this class

Generic	Trade
First Generation:	
Cefadroxil	Duricef, Ultracef
Cephalexin	Keflex
Cephadrine	Anspor, Velosef
Second Generation:	
Cefaclor	Ceclor
Cefuroxime	Ceftin
Third Generation:	
Cefixime	Suprax

CLINICAL ITEM REPORT - Drugs
Review Period: July 1, 1989 - June 30, 1991

ID Number:
Peer Group: General Practice

CODE: 61 **CEPHALOSPORIN**

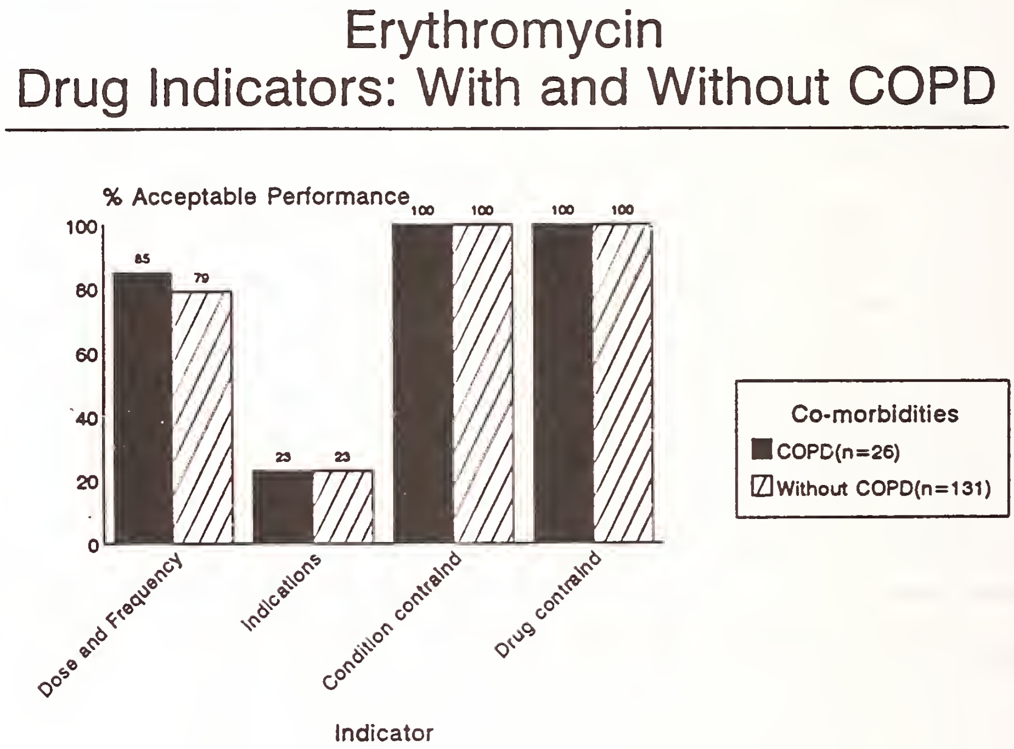
		Your Rates		Peer Group Rates	
Indicator	Criterion	Number of Patients	Percent Acceptable Performance	Average Number of Patients per Physician	Average Percent Acceptable Performance
Dose and Frequency	Both dose and frequency documented		%	2.4	79%
	Dose Documented		%	2.4	91%
	Frequency Documented		%	2.4	79%
Drug Indications	Drug prescribed appropriately for: ***First Generation:** Lower resp. tract infec., urinary tract infec., skin/soft tissue infec., bone infec. **Second Generation:** *Lower resp. tract infec. *Urinary tract infec. *Skin/soft tissue infec. *Bone infec. Otitis media, urinary tract infec., gonorrhea-cefuroxime **Third Generation:** Urinary tract infec.		%	2.2	15%
Condition Contraindications	No contraindications or use of drug justified despite contraindications: **Absolute:** Previous allergic reaction to cephalosporin **Risk/benefit:** Colitis, penicillin allergy, BUN >50 or creat. >2.5.		%	2.4	95%
Drug Contraindications	NA				
Drug Monitoring	NA				

* Only if organism resistant or unresponsive to other anti-infectives or patient allergic to penicillins or sulfonamides or trimethoprim-sulfamethoxazole.

ERYTHROMYCIN

The table on the opposite page displays the results of the review of those patients on erythromycin with comparison to your specialty. The five drug indicators are shown in the far left column. The next column presents the specific criteria used to evaluate the quality of care. The full text of the criteria with medical references is given in the DEMPAQ Self-Assessment Workbook. The remaining columns show your performance rates on the criteria compared to your specialty group rates.

The figure below shows statewide data for patients taking erythromycin.



Drugs within this class

Generic	**Trade**
Erythromycin	Eryc, E-Mycin, Ilotycin
Erythromycin Estolate	Ilosone
Erythromycin Ethylsuccinate	EryPed, Pediamycin, Wyamycin E, EES
Erythromycin Stearate	Erythrocin, Erypar, Wyamycin S

CLINICAL ITEM REPORT - Drug
Review Period: July 1, 1989 - June 30, 1991

ID Number:
Peer Group: General Practice

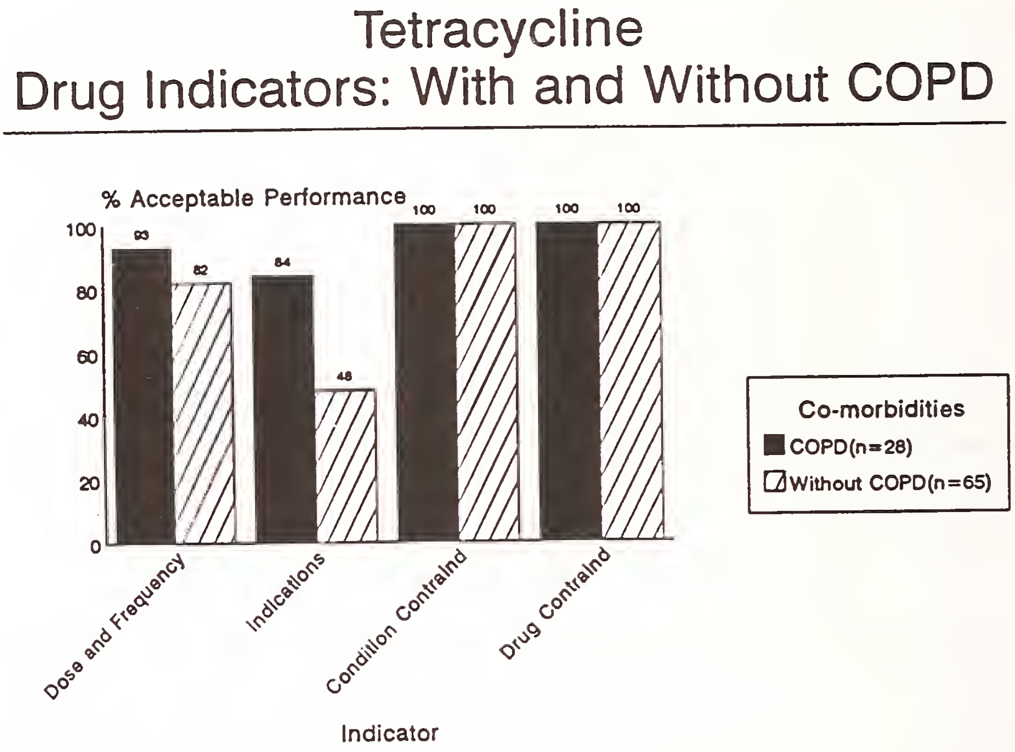
CODE: 62 **ERYTHROMYCIN**

		Your Rates		Peer Group Rates	
Indicator	**Criterion**	**Number of Patients**	**Percent Acceptable Performance**	**Average Number of Patients per Physician**	**Average Percent Acceptable Performance**
Dose and Frequency	Both dose and frequency documented		%	2.6	78%
	Dose Documented		%	2.6	91%
	Frequency Documented		%	2.6	86%
Drug Indications	Drug prescribed appropriately for: Campylobacter infec., pertussis treatment or prophylaxis **If allergic to penicillin:** Strep. pneumonia, strep. tonsillitis, community-acquired bronch., prophylaxis for dental procedures, otitis media, skin/soft tissue infec.		%	2.3	20%
Condition Contraindications	No contraindications or use of drug justified despite contraindications: **Absolute:** Allergy to erythromycin **Risk/benefit:** Hepatic impairment		%	2.6	100%
Drug Contraindications	NA				
Drug Monitoring	Overall Monitoring Score		%	0.1	0%
	Old Drugs:				
	If treatment >2 wks and on anticoagulants - prothrombin time q. 1 mo		%	0.1	0%
	New Drugs:				
	If treatment prolonged >2 wks and if on carbamazepine or phenytoin - serum drug levels of these 2 drugs within 1 mo start of therapy		%	0.0	%
	If treatment prolonged >2 wks and if on anticoagulants - prothrombin time within 1 wk start of therapy		%	0.0	%
	If treatment prolonged >2 wks and if on theophylline - levels within 1 mo start of therapy		%	0.0	%

TETRACYCLINE

The table on the opposite page displays the results of the review of those patients taking tetracycline, with comparison to your specialty. The five drug indicators are shown in the far left column. The next column presents the specific criteria used to evaluate the quality of care. The full text of the criteria with medical references is given in the DEMPAQ Self-Assessment Workbook. The remaining columns show your performance rates on the criteria compared to your specialty group rates.

The figure below shows statewide data for patients taking tetracycline.



Drugs within this class

Generic	Trade
Demeclocycline	Declomycin
Doxycycline	Doryx, Vibramycin
Methacycline	Rondomycin
Minocycline	Minocin
Oxytetracycline	Terramycin
Tetracycline	Achromycin, Panmycin, Sumycin, Tetracyn

CLINICAL ITEM REPORT - Drugs
Review Period: July 1, 1989 - June 30, 1991

ID Number:
Peer Group: General Practice

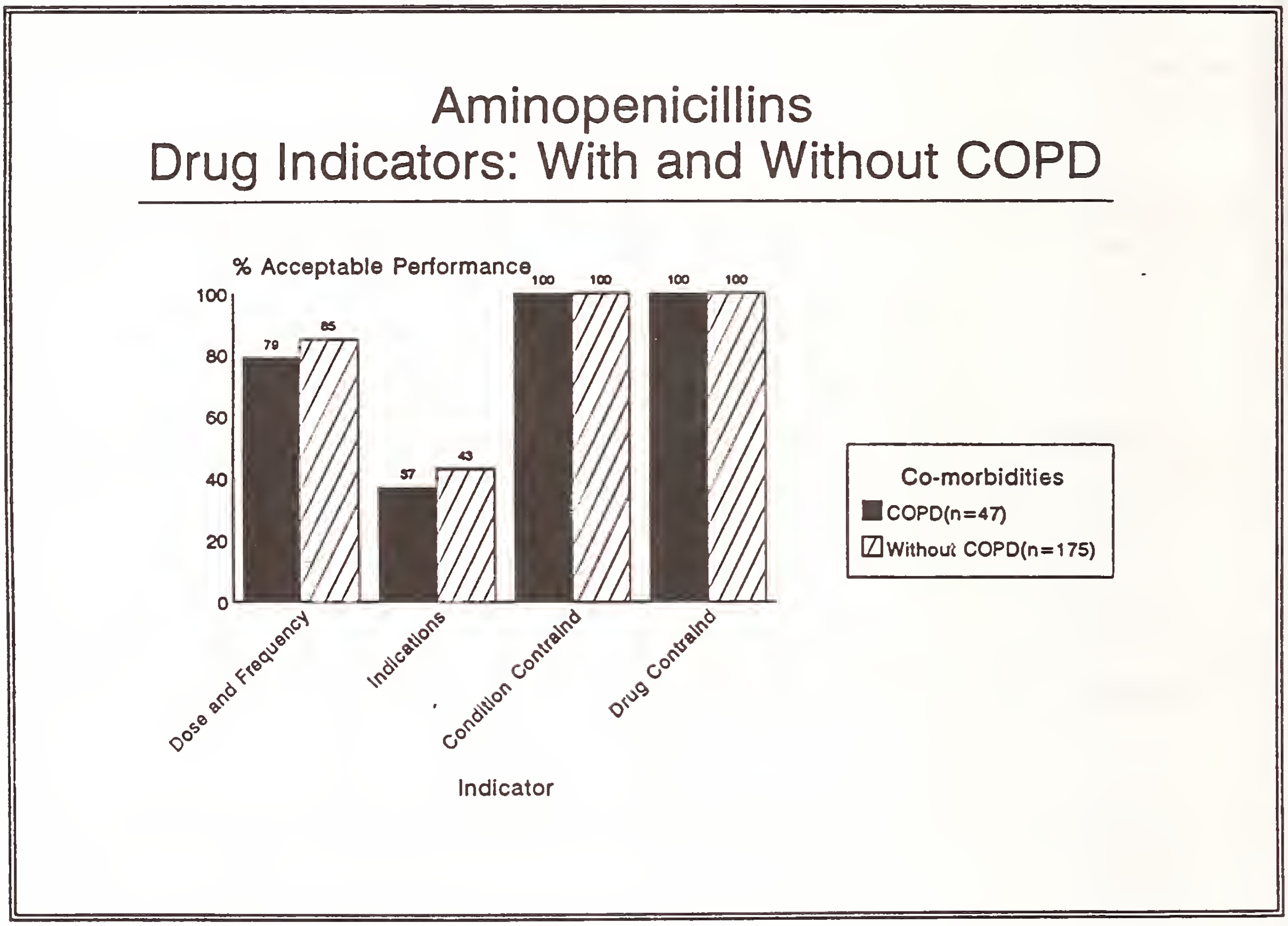
CODE: 64 **TETRACYCLINE**

Indicator	Criterion	Your Rates		Peer Group Rates	
		Number of Patients	Percent Acceptable Performance	Average Number of Patients per Physician	Average Percent Acceptable Performance
Dose and Frequency	Both dose and frequency documented		%	2.3	76%
	Dose Documented		%	2.3	88%
	Frequency Documented		%	2.3	82%
Drug Indications	Drug prescribed appropriately for: Acute/chron. bronchitis, pneumonia, pelvic inflamm. disease, urinary tract infec., chron. prostatitis, Lyme disease, chlamydia, epididymo-orchitis		%	2.1	55%
Condition Contraindications	No contraindications or use of drug justified despite contraindications: **Absolute:** BUN >50 or creat. >2.5 **Risk/benefit:** None		%	2.3	100%
Drug Contraindications	No contraindications or use of drug justified despite contraindications: **Absolute:** None **Risk/benefit:** Anticoagulants		%	2.3	100%
Drug Monitoring	Overall Monitoring Score		%	0.1	0%
	Old Drugs: NA				
	New Drugs: If minocycline, warn re vestibular effect		%	0.1	0%

AMINOPENICILLINS

The table on the opposite page displays the results of the review of those patients taking an aminopeniclin, with comparison to your specialty. The five drug indicators are shown in the far left column. The next column presents the specific criteria used to evaluate the quality of care. The full text of the criteria with medical references is given in the DEMPAQ Self-Assessment Workbook. The remaining columns show your performance rates on the criteria compared to your specialty group rates.

The figure below shows statewide data for patients taking an aminopenicillin.



Drugs within this class

Generic	Trade
Amoxicillin	Amoxil, Polymox, Trimox, Wymox
Amoxicillin+Clavulanate	Augmentin
Ampicillin	Amcill, Omnipen, Polycillin, Principen, Totacillin
Ampicillin+Sulbactam	Unasyn
Bacampicillin	Spectrobid
Cyclacillin	Cyclapen-W

CLINICAL ITEM REPORT - Drugs
Review Period: July 1, 1989 - June 30, 1991

ID Number:
Peer Group: General Practice

CODE: 65

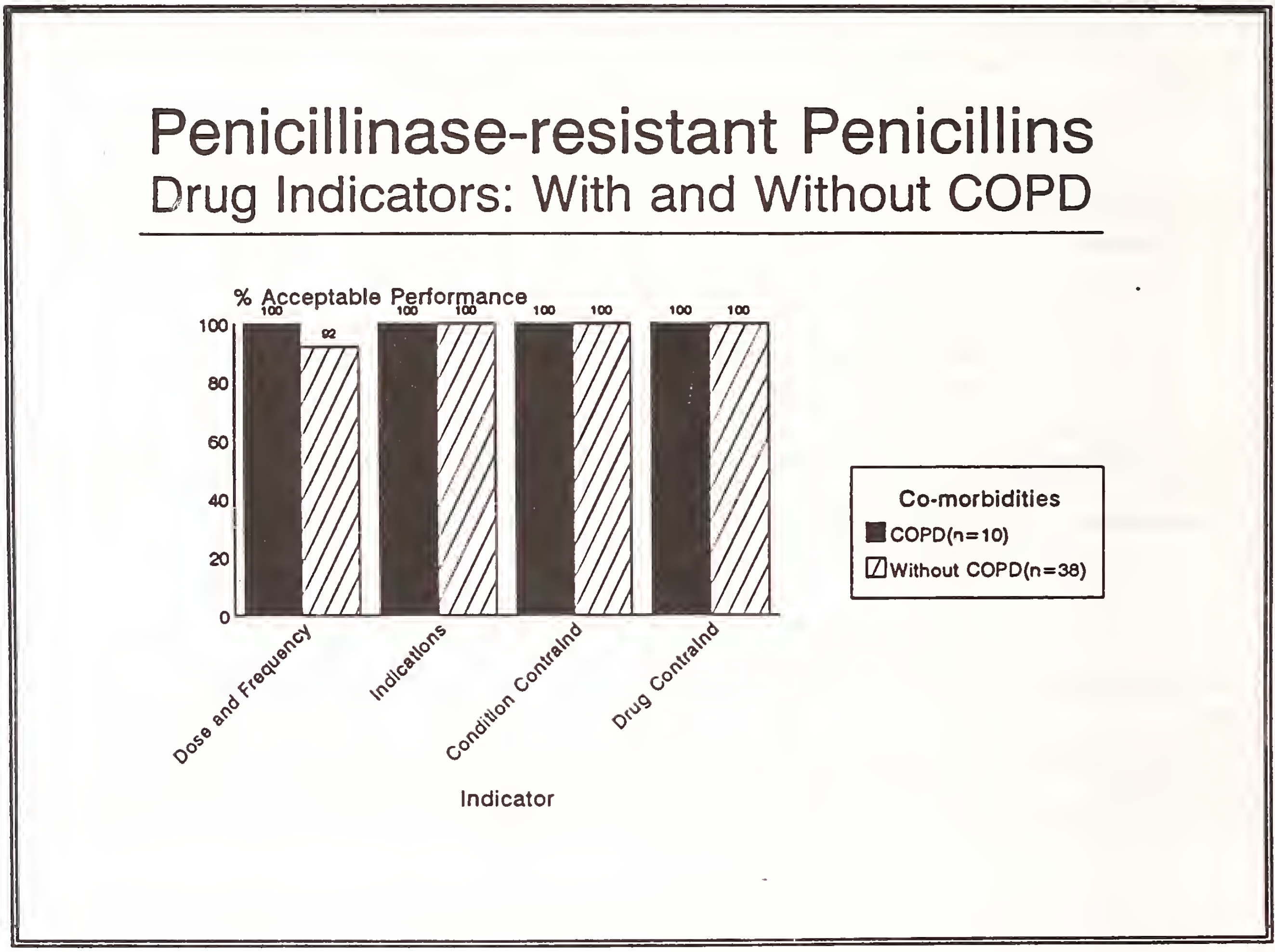
AMINOPENICILLINS

Indicator	Criterion	Your Rates		Peer Group Rates	
		Number of Patients	Percent Acceptable Performance	Average Number of Patients per Physician	Average Percent Acceptable Performance
Dose and Frequency	Both dose and frequency documented	3	100%	3.4	87%
	Dose Documented	3	100%	3.4	93%
	Frequency Documented	3	100%	3.4	87%
Drug Indications	Drug prescribed appropriately for: Otitis media, sinusitis, shigella gastroenteritis, urinary tract infec., acute prostatitis, pelvic inflamm. disease, acute epididymo-orchitis, urethral gonorrhea, pneumonia	3	0%	3.0	32%
Condition Contraindications	No contraindications or use of drug justified despite contraindications: **Absolute:** None **Risk/benefit:** Allergy to penicillin	3	100%	3.4	100%
Drug Contraindications	NA				
Drug Monitoring	NA				

PENICILLINASE-RESISTANT PENICILLIN

The table on the opposite page displays the results of the review of those patients on a penicillinase-resistant penicillin, with comparison to your specialty. The five drug indicators are shown in the far left column. The next column presents the specific criteria used to evaluate the quality of care. The full text of the criteria with medical references is given in the DEMPAQ Self-Assessment Workbook. The remaining columns show your performance rates on the criteria compared to your specialty group rates.

The figure below shows statewide data for patients taking a penicillinase-resistant penicillin.



Drugs within this class

Generic	**Trade**
Cloxacillin	Cloxapen, Tegopen
Dicloxacillin	Dynapen, Pathocil, Dycill
Oxacillin	Bactocill, Prostaphlin

CLINICAL ITEM REPORT - Drugs
Review Period: July 1, 1989 - June 30, 1991

ID Number:
Peer Group: General Practice

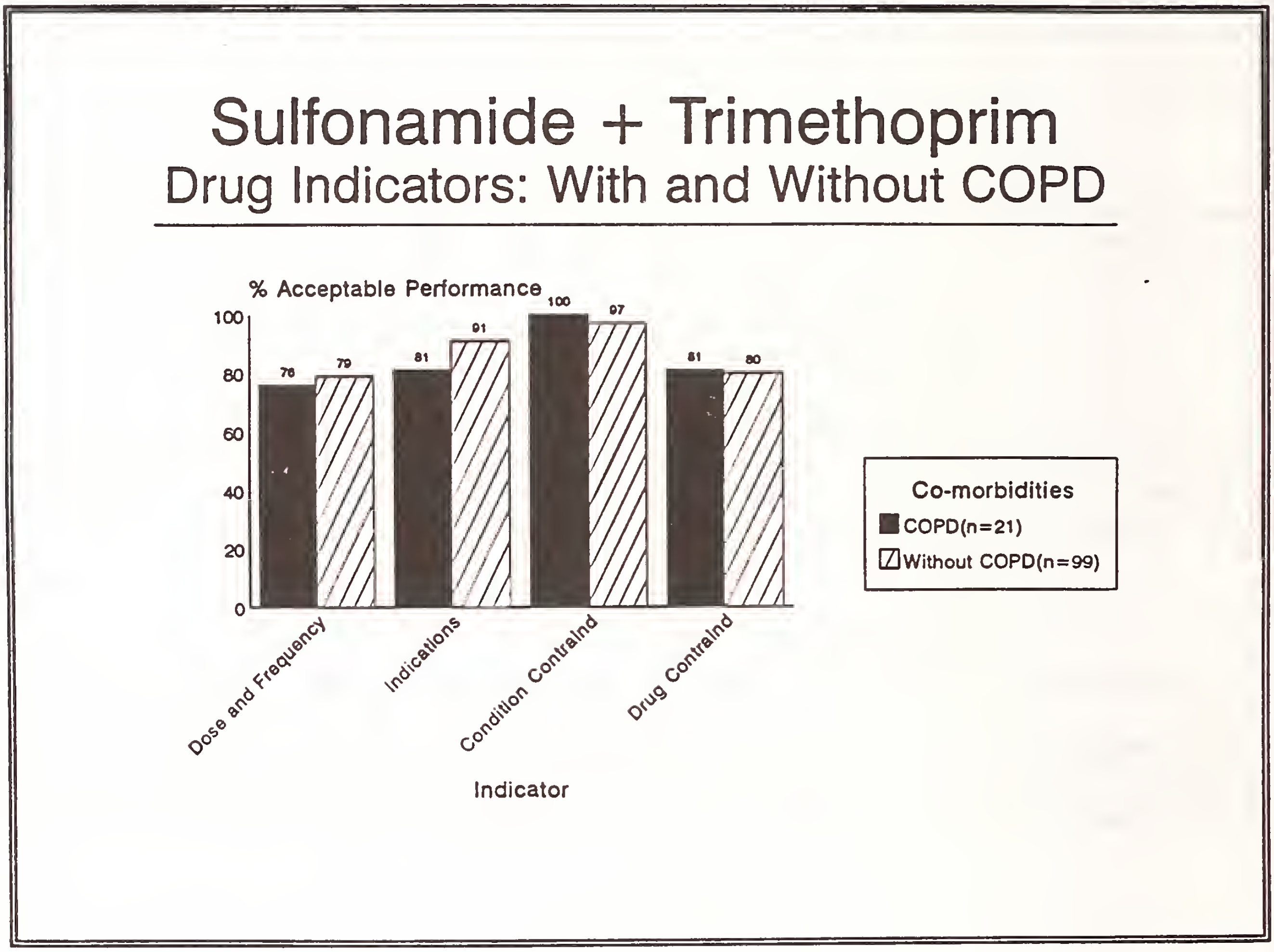
CODE: 66 PENICILLINASE-RESISTANT PENICILLINS

		Your Rates		Peer Group Rates	
Indicator	**Criterion**	**Number of Patients**	**Percent Acceptable Performance**	**Average Number of Patients per Physician**	**Average Percent Acceptable Performance**
Dose and Frequency	Both dose and frequency documented	1	100%	2.4	86%
	Dose Documented	1	100%	2.4	86%
	Frequency Documented	1	100%	2.4	86%
Drug Indications	Drug prescribed appropriately for: Infections of skin and soft tissue, mild infections of joints, respiratory and genitourinary tract infections where penicillin-resistant strains have been cultured or are suspected.	1	100%	0.4	100%
Condition Contraindications	No contraindications or use of drug justified despite contraindications: **Absolute:** None **Risk/benefit:** Allergy to penicillin	1	100%	2.4	100%
Drug Contraindications	NA				
Drug Monitoring	NA				

SULFONAMIDE + TRIMETHOPRIM

The table on the opposite page displays the results of the review of those patients on bactrim, with comparison to your specialty. The five drug indicators are shown in the far left column. The next column presents the specific criteria used to evaluate the quality of care. The full text of the criteria with medical references is given in the DEMPAQ Self-Assessment Workbook. The remaining columns show your performance rates on the criteria compared to your specialty group rates.

The figure below shows statewide data for patients taking bactrim.



Drugs within this class

Generic	Trade
Sulfamethoxazole+Trimethoprim	Bactrim, Cotrim, Septra

CLINICAL ITEM REPORT - Drugs
Review Period: July 1, 1989 - June 30, 1991

ID Number:
Peer Group: General Practice

CODE: 72 **SULFONAMIDE + TRIMETHOPRIM**

Indicator	Criterion	Your Rates		Peer Group Rates	
		Number of Patients	Percent Acceptable Performance	Average Number of Patients per Physician	Average Percent Acceptable Performance
Dose and Frequency	Both dose and frequency documented	6	100%	2.2	76%
	Dose Documented	6	100%	2.2	83%
	Frequency Documented	6	100%	2.2	82%
Drug Indications	Drug prescribed appropriately for: Lower urinary tract infec., pyelonephritis, prophylaxis of urinary infec., sinusitis, chron. bronchitis, chron. prostatitis, shigellosis, otitis media, traveler's diarrhea, salmonellosis	5	60%	1.9	86%
Condition Contraindications	No contraindications or use of drug justified despite contraindications: **Absolute:** Sulfonamides allergy, G6PD deficiency **Risk/benefit:** Blood dyscrasias or megaloblastic anemia, hepatic impairment, renal impairment	6	100%	2.2	100%
Drug Contraindications	No contraindications or use of drug justified despite contraindications: **Absolute:** None **Risk/benefit:** Oral antidiabetics, anticoagulants, phenytoin, methotrexate, thiazides	6	50%	2.2	70%
Drug Monitoring	Overall Monitoring Score	2	50%	0.3	10%
	Old Drugs:				
	If long-term, high-dose therapy:				
	CBC - q. 1 mo	0	%	0.1	0%
	UA - crystals q. 6 mos	0	%	0.1	0%
	BUN or creat. q. 6 mos	0	%	0.1	0%
	If anticoagulants - prothrombin time q. 1 mo	0	%	0.0	%

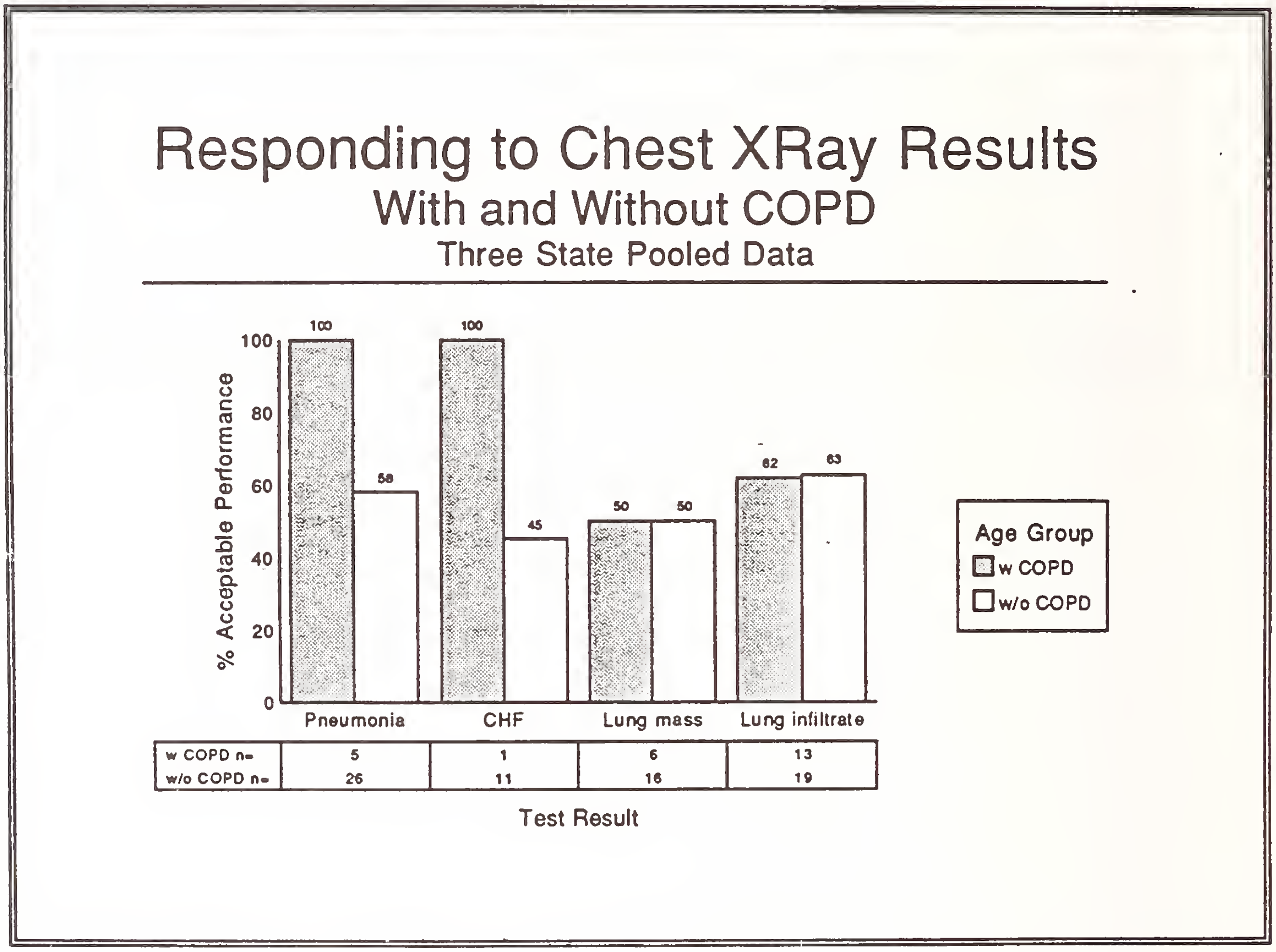
(cont'd)

Indicator	Criterion	Your Rates		Peer Group Rates	
		Number of Patients	Percent Acceptable Performance	Average Number of Patients per Physician	Average Percent Acceptable Performance
	New Drugs:				
	If >1 mo: CBC - within 1 mo start of therapy	2	50%	0.3	13%
	UA - crystals within 6 mos start of therapy	1	100%	0.2	25%
	BUN or creat. - within 6 mos start of therapy	1	100%	0.2	25%
	If anticoagulants - PT within 1 wk start of therapy	1	100%	0.2	33%
	If dilantin - levels within 1 mo start of therapy	1	100%	0.2	33%

CHEST XRAY

The table on the opposite page displays the results of the review of those patients with abnormal chest xray tests, with comparisons to your specialty. The three test indicators are shown in the far left column. The next column presents the specific criteria used to evaluate the quality of care. The full text of the criteria with medical references is given in the DEMPAQ Self-Assessment Workbook. The remaining columns show your performance rates on the criteria compared to your specialty group rates.

The figure below shows statewide data for patients with abnormal chest xray tests.



CLINICAL ITEM REPORT - Tests
Review Period: July 1, 1989 - June 30, 1991

ID Number:
Peer Group: General Practice

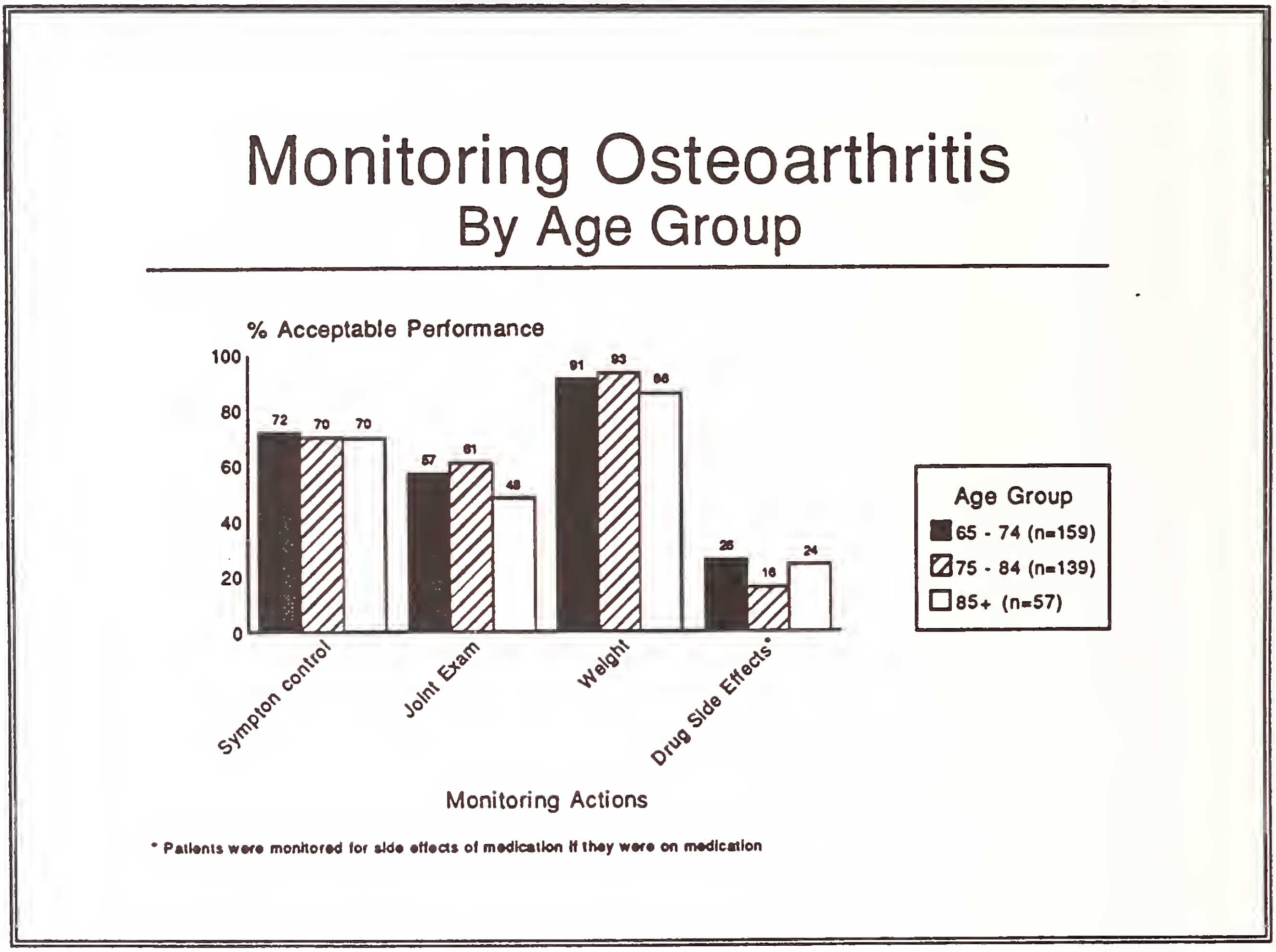
CODE: 12 **X-RAY: CHEST**

		Your Rates		Peer Group Rates	
Indicator	**Criterion**	Number of Patients	Percent Acceptable Performance	Average Number of Patients per Physician	Average Percent Acceptable Performance
Test Indications	Tests ordered appropriately for: **Conditions: Annually in chronic smoker:** Known or suspected heart disease, chest disease, or esophageal disease; heartburn/acid reflux; chest or shoulder pain; cough, fever, lung signs; cough and wt loss in smoker; preop chest x-ray; chest trauma, suspected rib fracture; known TB or positive PPD.		%	2.5	96%
Test Urgent Response	Patient referred to hospital or ER for lab values: Significant evidence of CHF **OR** pulm. edema **OR** pneumothorax impairing resp. or cardiac func. **OR** severe pneum. with incapacitating symptoms **OR** pneum. in debilitated patient **OR** pneum. in patient unable to care for self **AND** without caregiver.		%	0.1	100%
Test Response	Overall score:		%	0.5	67%
	Abnormal test results appropriately followed up:				
	Pneumonia: Within 1 day treat with antibiotics and review within 1 wk. If symptoms persist, repeat x-ray and get PPD within 1 mo.		%	0.3	60%
	CHF: Within 1 wk review salt intake. Start or adjust diur. therapy. Re-exam within 1 wk. If symptoms persist, augment treatment **OR** req. consult **OR** referral.		%	0.1	100%
	Lung mass: Within 2 wks, chest CT scan and biopsy or referral to pulm./thoracic surgeon.		%	0.1	100%
	Lung infiltrate: Within 1 day treat with antibiotics for >1 wk, then repeat x-ray and get PPD after therapy if symptoms persist.		%	0.1	50%
	Pneumothorax, small newly discovered: Within 1 day treat symptomatically, repeat x-ray within 24 hrs and if increase in size, immediate referral or hospitalization.		%	0.0	%

OSTEOARTHRITIS

The table on the opposite page displays the results of the review of your osteoarthritis patients' charts with comparisons to your specialty. The three diagnosis indicators are shown in the far left column. The next column presents the specific criteria used to evaluate the quality of care. The full text of the criteria with medical references is given in the DEMPAQ Self-Assessment Workbook. The remaining columns show your performance rates on the criteria compared to your specialty group rates.

The figure below shows statewide data for patients with osteoarthritis.



* Patients were monitored for side effects of medication if they were on medication

CLINICAL ITEM REPORT - Diagnosis
Review Period: July 1, 1989 - June 30, 1991

ID Number:
Peer Group: General Practice

CODE 03: **OSTEOARTHRITIS**

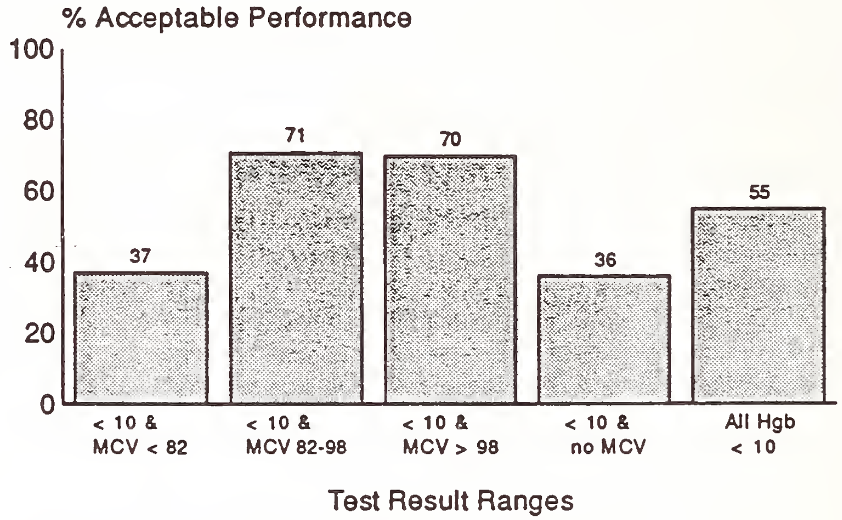
Indicator	Criterion	Your Rates		Peer Group Rates	
		Number of Patients	Percent Acceptable Performance	Average Number of Patients per Physician	Average Percent Acceptable Performance
Old Diagnosis Monitoring	Overall Score	2	75%	4.0	59%
	Control of symptoms - once	2	100%	4.0	65%
	Exam of joints most affected - once	2	100%	4.0	58%
	Weight - once	2	100%	4.0	92%
	Side effects of meds - once	2	0%	3.8	19%
Evidence for a New Diagnosis	Symptoms lasting longer than 1 mo that are suggestive of osteoarthritis OR positive x-ray findings of osteoarthritis	0	%	1.3	56%
Search for Treatable Causes	Obesity (weight and height)	0	%	0.9	11%

The table on the opposite page displays the results of the review of those patients with abnormal hgb/hct tests, with comparisons to your specialty. The three test indicators are shown in the far left column. The next column presents the specific criteria used to evaluate the quality of care. The full text of the criteria with medical references is given in the DEMPAQ Self-Assessment Workbook. The remaining columns show your performance rates on the criteria compared to your specialty group rates.

The figure below shows three state (Maryland, Alabama, Iowa) combined data for patients with abnormal hgb/hct tests.

Response to a Hgb < 10

Three State Pooled Data



N for ranges (left to right): 19, 24, 10, 11, 64

CLINICAL ITEM REPORT - Tests
Review Period: July 1, 1989 - June 30, 1991

ID Number:
Peer Group: General Practice

CODE: 02 **HEMOGLOBIN/HEMATOCRIT - HGB >18 OR HGB <10**

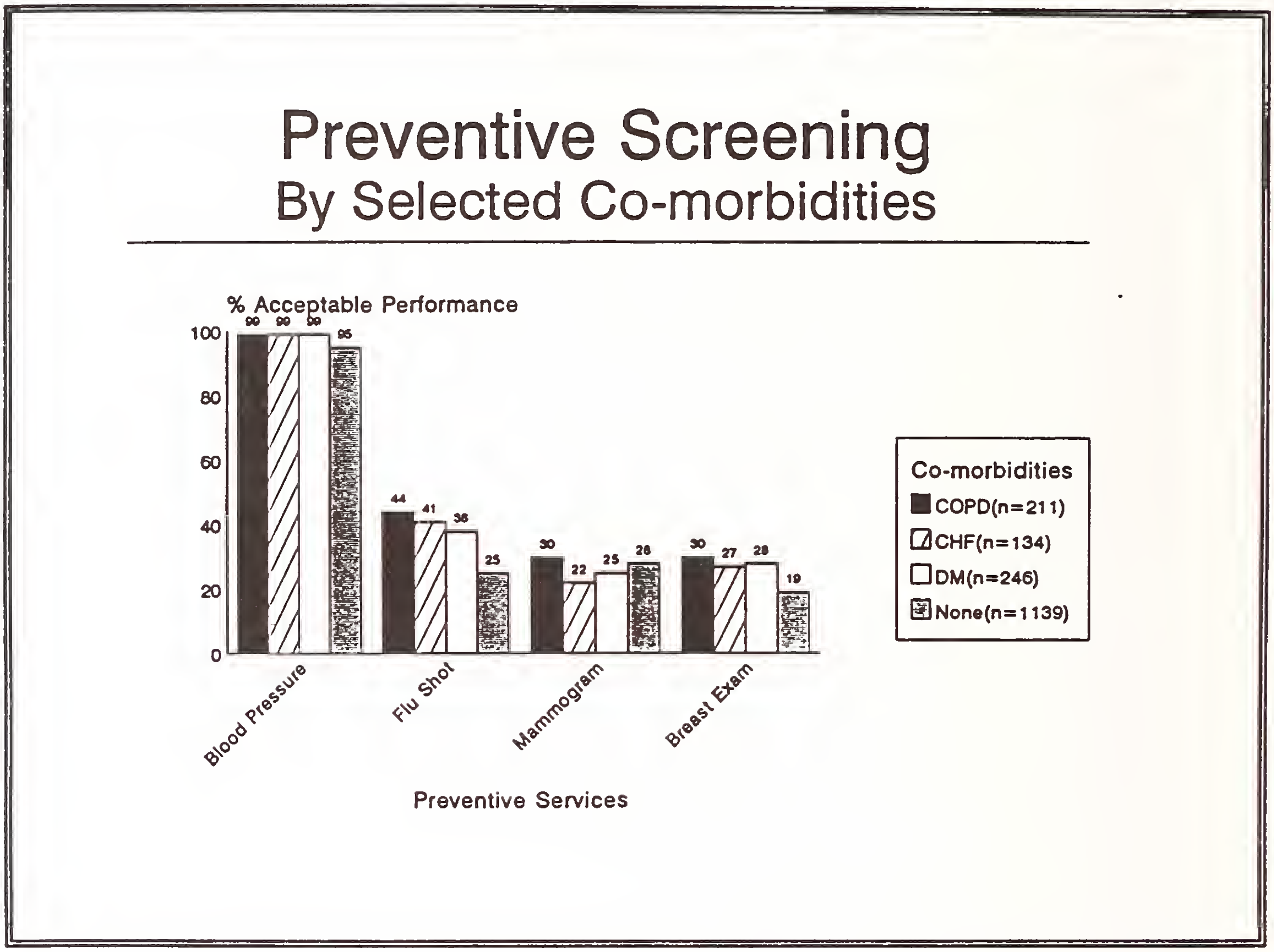
		Your Rates		Peer Group Rates	
Indicator	Criterion	Number of Patients	Percent Acceptable Performance	Average Number of Patients per Physician	Average Percent Acceptable Performance
Test Indications	Tests ordered appropriately for: **Conditions:** Anemia, blood loss, CAD, HTN, chron. renal failure, polycythemia, melena/stool-positive occult blood, fatigue/dizziness/conf., decr. tolerance for exertion or shortness of breath, infec. symptoms, aspirin use, NSAID use, gastrointestinal dis., concern re nutrition, self-care		%	1.2	100%
Test Urgent Response	Patient referred to hospital or ER for lab values: If new finding of hemoglobin <6 or hematocrit <18% and symptomatic.		%	0.0	%
Test Response	Overall score:		%	1.2	50%
	Abnormal test results appropriately followed up:				
	Hemoglobin <10 and mean corpuscular vol. <82: Within 1 wk, RBC and peripheral smear. If mean corpuscular vol.<82, inq. re blood loss **AND** check iron/total iron-binding capacity **OR** serum ferritin **OR** therapeutic trial of iron. Then, if no obvious source of blood loss, check stool for occult blood. If iron deficiency, workup within 3 mos.		%	0.6	33%
	Hemoglobin <10 and mean corpuscular vol. 82-98: RBC and peripheral smear. If mean corpuscular vol. 82-98, then check iron/total iron-binding **OR** ferritin **AND** BUN/creat. and rev. results within 2 wks.		%	0.6	67%
	Hemoglobin <10 and mean corpuscular vol. >98: RBC and peripheral smear. Check history of chron. alcohol use, B12, folate, and review results within 2 wks.		%	0.0	%
	Hemoglobin >18 or hematocrit >54: Check arterial pO_2 and renal ultrasound and review results within 1 mo **OR** req. consult **OR** refer to hematologist.		%	0.0	%
	Hemoglobin <10 and MCV not available: Inquire as to obvious blood loss **AND** check iron/total iron-binding **OR** ferritin **OR** trial of iron. **THEN** check occult blood. If iron deficiency, work-up within 3 mos.		%	0.0	%

PREVENTION

PREVENTION

The table on the opposite page shows the results of the review of your patients' records for four selected preventive services: blood pressure, flu shot, breast exam (women only), and mammogram (women under age 75 only).

The graph on this page shows statewide performance data.



CLINICAL ITEM REPORT - Prevention
Review Period: July 1, 1989 - June 30, 1991

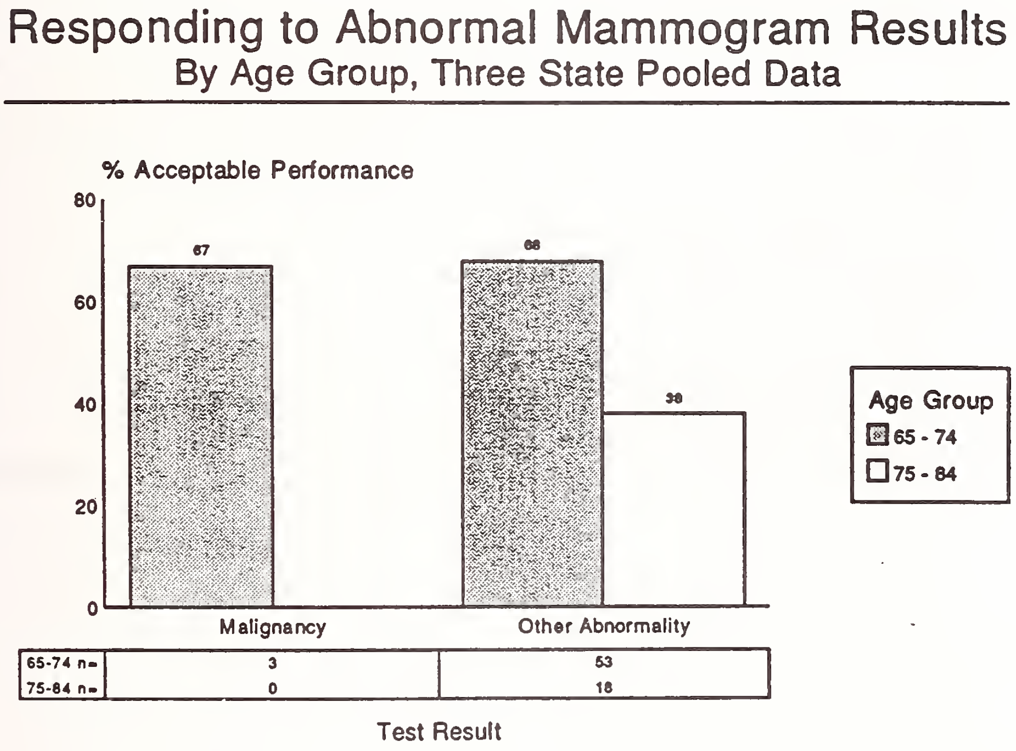
ID Number:
Peer Group: Internal Medicine

Indicator	Criterion	Your Rates		Peer Group Rates	
		Number of Patients	Percent Acceptable Performance	Average Number of Patients per Physician	Average Percent Acceptable Performance
Blood Pressure	Once in two-yr period	19	100%	18.3	95%
Mammogram	Once in two-yr period for women <75 yrs old	6	50%	5.5	32%
Breast Exam	Once in two-yr period for women	10	10%	11.4	24%
Flu Shot	Once in two-yr period	19	47%	18.3	25%

MAMMOGRAM

The table on the opposite page displays the results of the review of those patients with abnormal mammograms, with comparisons to your specialty. The three test indicators are shown in the far left column. The next column presents the specific criteria used to evaluate the quality of care. The full text of the criteria with medical references is given in the DEMPAQ Self-Assessment Workbook. The remaining columns show your performance rates on the criteria compared to your specialty group rates.

The figure below shows statewide data for patients with abnormal mammograms.


Responding to Abnormal Mammogram Results
By Age Group, Three State Pooled Data

CLINICAL ITEM REPORT - Tests
Review Period: July 1, 1989 - June 30, 1991

ID Number:
Peer Group: General Practice

CODE: 13 **MAMMOGRAM**

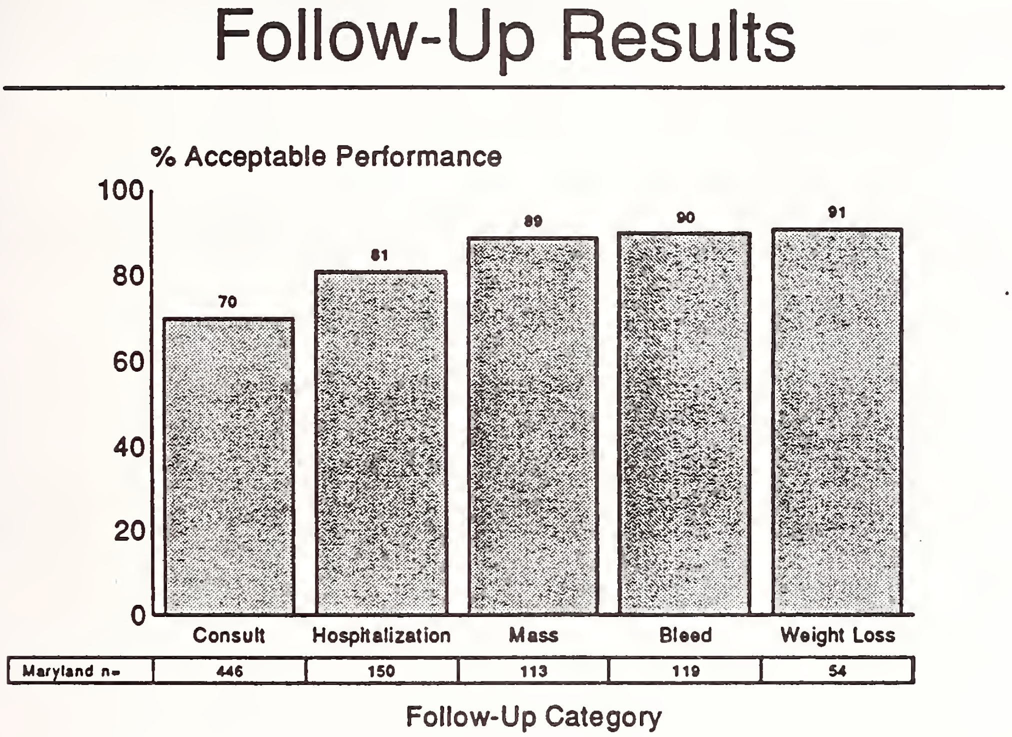
Indicator	Criterion	Your Rates		Peer Group Rates	
		Number of Patients	Percent Acceptable Performance	Average Number of Patients per Physician	Average Percent Acceptable Performance
Test Indications	Tests ordered appropriately for: **Conditions: Annually:** Positive for family history of breast cancer, personal history of breast cancer, or screening.		%	1.3	94%
Test Urgent Response	NA				
Test Response	Overall score:		%	0.8	50%
	Abnormal test results appropriately followed up:				
	Abnormal mammogram, diagnostic of malignancy: Within 1 wk refer back to radiology or surgery.		%	0.1	100%
	Abnormal mammogram, not diagnostic: Within 6 mos repeat test in time specified by radiologist.		%	0.6	40%

FOLLOW-UP

FOLLOW-UP

The table on the opposite page shows the results of the review of your patients' records for five selected types of follow-up: follow-up of a hospitalization or consult request and follow-up of significant findings such as a mass, bleed or unexplained weight loss.

The graph on this page shows statewide performance data.



CLINICAL ITEM REPORT - Follow-Up
Review Period: July 1, 1989 - June 30, 1991

ID Number:

Peer Group: General Practice

Indicator	Criterion	Your Rates		Peer Group Rates	
		Number of Patients	Percent Acceptable Performance	Average Number of Patients per Physician	Average Percent Acceptable Performance
Follow-up of Consult or Hospitalization	Overall Score	5	80%	5.7	76%
	If consult requested, follow-up mention in record.	2	50%	4.6	71%
	If hospitalization planned, follow-up mention in record.	3	100%	1.3	83%
Follow-up of Significant Finding	Overall Score	4	100%	2.4	90%
	If a mass is found, follow-up of finding in record.	1	100%	1.0	94%
	If a bleed is found, follow-up of finding in record.	2	100%	1.1	93%
	If a weight loss is found, follow-up of finding in record.	1	100%	0.4	81%

INDICATOR SUMMARY REPORTS
June 30, 1993

INDICATOR SUMMARY REPORTS

The Indicator Summary Report presents one table for each function - drugs, diagnosis, tests, prevention, and followup. These tables summarize your performance rates for ***each*** indicator of a function.

1. How to read the Indicator Summary Report

The function displayed is shown in the title. The dates covered by the review appear immediately below the title. The function name also appears above the table, on the right, a placement which makes it easy to find the table when flipping through the book.

COLUMN	DESCRIPTION
Indicator	Displays the indicators associated with the function listed in the title for this page, e.g. Drugs, Tests, etc.
Your Rates: Number of drugs [tests, diagnoses, etc.]	Shows the number of items included in the rate displayed in the next column. If each of your 25 patients had two drugs, then number of drugs shown in this column would be 50. The number of drugs [tests, diagnoses, etc.] evaluated depends upon the indicator. For example, indicators which apply only to new diagnoses usually have fewer cases than indicators which apply to pre-existing diagnoses (see GLOSSARY for definitions of *new* versus *pre-existing*).
Your Rates: Percent Acceptable Performance	Displays the "percent acceptable performance" rate for an indicator. See below for calculation details.
Peer Group Rates: Average Number of drugs [test, diagnoses, etc.] per physician	Shows the average number of items ***per physician*** who were included in the rate shown in the next column
Peer Group Rates: Average Percent Acceptable Performance	Presents the average percent acceptable performance rate for all physicians in your peer (specialty) group. See below for calculation details.
Quartile Rank	Displays a comparative statistic. All rates within your specialty for a particular indicator are divided into four equal groups: 1st (lowest) quartile: your score fell between the 0th and 24th percentile, inclusive 2nd quartile: your score fell between the 25th and 49th percentile, inclusive 3rd quartile: your score fell between the 50th and 74th percentile, inclusive 4th (highest) quartile: your score fell between the 75th and 99th percentile, inclusive

2. **Interpreting the Indicator Summary Report**

Indicator rates summarize performance across different clinical items such as penicillin, beta blockers and corticosteroids. The average rates of physicians within your specialty who submitted records for DEMPAQ review are given so you can see how your performance compares to that of your peers. **Caution:** Rates based on small numbers of cases (fewer than 5) may not reflect your customary performance, because the small number gives a statistically unstable result.

The quartile rank presents another measure of comparison with your peers. Performance in the 4th quartile usually may be considered better than performance in the first quartile. **Caution:** If the distribution of scores is tight, e.g. if most of the scores fall within a 20 percentage point range (see diagrams on pages opposite the tables), then the differences in performance between the 1st and 4th quartiles may not be clinically important.

3. **Calculating the Indicator Summary Rates**

The indicator rates are first calculated for a patient and then averaged across all patients. Figure one depicts how the MET and AA scores for each clinical item are added together and divided by the total number of applicable scores for a patient (MET + AA + FLAG). This gives a patient level performance rate for a particular indicator. The monitoring (drug and diagnosis) indicator rates are calculated by averaging the percentage of monitoring items with met or AA findings across all applicable clinical items.

Figure One

Diagnosis Indicator Rates
For a Single Patient

	DM	HTN	IHD	CHF	COPD	OA	RATE
Evidence for New Dx	NA	NA	NA	MET	FLAG	NA	1/2 = 50%
Treatable Cause	NA	NA	NA	FLAG	FLAG	NA	0/2 = 0%
Old Dx Monitoring	88	50	33	NA	NA	NA	(88+50+33)/3 = 57%

Figure two shows how the indicator rates for each patient are averaged to create the doctor level indicator rate. The denominator is the number of patients to whom the indicator applies. This method of calculating a summary rate ensures that no single patient will unduly influence the summary rate.

Figure Two

Indicator Summary Rates
For a Physician

	Patient 1	Patient 2	Patient 3	Rate*
Evidence for New Dx	50	100	NA	(50+100)/2 = 75%
Treatable Cause	0	100	NA	(0+100)/2 = 50%
Old Dx Monitoring	57	50	33	(57+50+33)/3 = 47%

*Rate = average across all patients

4. Calculating peer group rates

Peer group rates are constructed by averaging individual physician performance rates, by specialty. Only doctors who submitted records for the DEMPAQ review are included in the peer group rate. Your peer group was determined from the specialty code in the Medicare carrier provider file. If general practice was listed as your specialty on the provider file, you were assigned to the general practice peer group.

DRUG INDICATOR SUMMARY

The table on the opposite page summarizes performance on the five drug indicators. The function is identified both in the title and above the top right hand corner of the table. The indicators associated with the function appear in the far left column. The remaining columns show your performance compared to that of your peer (specialty) group.[1]

The figure on this page shows the distribution of your peer group's scores for each indicator. Each dot represents a single physician. For example, if, on the right-hand page, you see that you scored 87% for the Dose and Frequency indicator, then you are represented by one of the dots in the 80-89% row of the Dose and Frequency column. Find your Drug Indications performance rate on the opposite page and then locate the corresponding dot in the Drug Indications column on this page. The other dots in this column represent the performance of your peers.

Use this figure to help you interpret the quartile range shown on the opposite page. Usually performance in the 4th quartile may be considered better than performance in the 1st quartile. However, if the distribution of scores is tight, e.g., if most of the scores fall within a 20 percentage point range, then the differences in performance between the 1st and 4th quartiles may not be clinically important.

RATE OF ACCEPTABLE PERFORMANCE
GENERAL PRACTICE - DRUGS

Percentage	Dose and Frequency	Drug Indications	Drug-Condition Contraindications	Drug-Drug Contraindications	Drug Monitoring
100	o		oooooooo	ooooo	
90-99	oooooooooooooo		oooooooooooooooooo	ooooooooooo	
80-89	ooooo	ooo	o	oooooooooo	
70-79	ooo	oooo		o	
60-69		oooo			o
50-59	o	ooooooo			oo
40-49	o	ooo			ooooo
30-39		oooo			oooooo
20-29	o	o			ooooooo
10-19					ooo
0-9	o	o			oo

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[1] Only doctors who submitted records for the DEMPAQ review are included in the peer group rate. Your peer group w determined from the specialty code in the Medicare carrier provider file. If general practice was listed as your specialty the provider file, you were assigned to the general practice peer group.

INDICATOR SUMMARY REPORT - Drugs
Review Period: July 1, 1989 - June 30, 1991

ID Number:
Peer Group: General Practice

	Your Rates		Peer Group Rates		
Indicator	Number of Drugs	Percent Acceptable Performance	Average Number of Drugs per Physician	Average Percent Acceptable Performance	Quartile[3] Rank
Dose and Frequency	49	94%	34.0	81%	3
Drug Indications	22	37%	17.1	55%	1
Condition Contraindications	49	96%	34.0	96%	2
Drug Contraindications	49	85%	34.0	92%	1
Drug Monitoring	36	24%	20.6	31%	2

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[3] Quartile ranks show how your scores compare to those of your peers. In general a rank of 4 indicates better performance than a rank of 1 (see caveat and diagram, on opposite page).

A rank of "1" means your score fell between the 0th and 24th percentile, inclusive.
A rank of "2" means your score fell between the 25th and 49th percentile, inclusive.
A rank of "3" means your score fell between the 50th and 74th percentile, inclusive.
A rank of "4" means your score fell between the 75th and 99th percentile, inclusive.

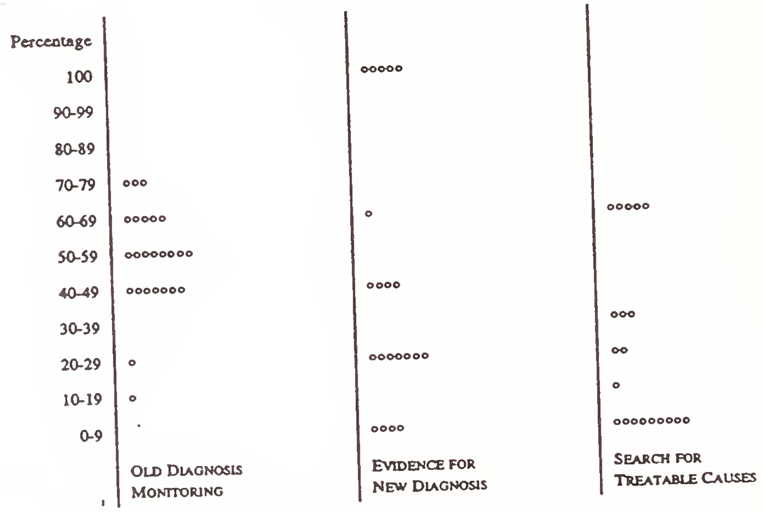
DIAGNOSIS INDICATOR SUMMARY

The table on the opposite page summarizes performance on the three diagnosis indicators. The function is identified in both the title and above the top right hand corner of the table. The indicators associated with the function appear in the far left column. The remaining columns show your performance compared to that of your peer (specialty) group.[1]

The figure on this page shows the distribution of your peer group's scores for each indicator. Each dot represents a single physician. For example, if, on the right-hand page you see that you scored 87% for the Old Diagnosis Monitoring indicator, then you are represented by one of the dots in the 80-89% row of the Old Diagnosis Monitoring column. Find your Evidence for New Diagnosis performance rate on the opposite page and then locate the corresponding dot in the Evidence for New Diagnosis column on this page. The other dots in this column represent the performance of your peers.

Use this figure to help you interpret the quartile range shown on the opposite page. Usually performance in the 4th quartile may be considered better than performance in the 1st quartile. However, if the distribution of scores is tight, e.g. if most of the scores fall within a 20 percentage point range, then the differences in performance between the 1st and 4th quartiles may not be clinically important.

RATE OF ACCEPTABLE PERFORMANCE
GENERAL PRACTICE - DIAGNOSIS



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[1] Only doctors who submitted records for the DEMPAQ review are included in the peer group rate. Your peer group was determined from the specialty code in the Medicare carrier provider file. If general practice was listed as your specialty on the provider file, you were assigned to the general practice peer group.

INDICATOR SUMMARY REPORT - Diagnoses
Review Period: July 1, 1989 - June 30, 1991

ID Number:
Peer Group: General Practice

	Your Rates		Peer Group Rates		
Indicator	**Number of Diagnoses**	**Percent Acceptable Performance**	**Average Number of Diagnoses per Physician**	**Average Percent Acceptable Performance**	**Quartile[1] Rank**
New Diagnosis Indications	0	%	3.5	45%	
New Diagnosis Workup	0	%	2.8	21%	
Pre-exisitng Diagnosis Monitoring	11	55%	16.4	53%	3

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[1] Quartile ranks show how your scores compare to those of your peers. In general a rank of 4 indicates better performance than a rank of 1 (see caveat and diagram, on opposite page).

A rank of "1" means your score fell between the 0th and 24th percentile, inclusive.
A rank of "2" means your score fell between the 25th and 49th percentile, inclusive.
A rank of "3" means your score fell between the 50th and 74th percentile, inclusive.
A rank of "4" means your score fell between the 75th and 99th percentile, inclusive.

TEST INDICATOR SUMMARY

The table on the opposite page summarizes performance on the three test indicators. The function is identified in both the title and above the top right hand corner of the table. The indicators associated with the function appear in the far left column. The remaining columns show your performance compared to that of your peer (specialty) group.[1]

The figure on this page shows the distribution of your peer group's scores for each indicator. Each dot represents a single physician. For example, if, on the right-hand page you see that you scored 87% for the Test Indications indicator, then you are represented by one of the dots in the 80-89% row of the Test Indications column. Find your Appropriate Response performance rate on the opposite page and then locate the corresponding dot in the Appropriate Response column on this page. The other dots in this column represent the performance of your peers.

Use this figure to help you interpret the quartile range shown on the opposite page. Usually performance in the 4th quartile may be considered better than performance in the 1st quartile. However, if the distribution of scores is tight, e.g. if most of the scores fall within a 20 percentage point range, then the differences in performance between the 1st and 4th quartiles may not be clinically important.

RATE OF ACCEPTABLE PERFORMANCE
GENERAL PRACTICE - TESTS

Percentage	TEST INDICATIONS	TEST URGENT RESPONSE	TEST RESPONSE
100	ooooooooo	oooo	o
90-99	oooooo		
80-89	ooooooo		
70-79	oo		o
60-69	o		ooo
50-59	o		ooooo
40-49			ooo
30-39			ooooo
20-29			ooo
10-19			ooo
0-9			oo

---

[1] Only doctors who submitted records for the DEMPAQ review are included in the peer group rate. Your peer group was determined from the specialty code in the Medicare carrier provider file. If general practice was listed as your specialty on the provider file, you were assigned to the general practice peer group.

INDICATOR SUMMARY REPORT - Tests
Review Period: July 1, 1989 - June 30, 1991

ID Number:
Peer Group: General Practice

Indicator	Your Rates		Peer Group Rates		Quartile[1] Rank
	Number of Tests	Percent Acceptable Performance	Average Number of Tests per Physician	Average Percent Acceptable Performance	
Test Indications	11	92%	14.5	90%	2
Urgent Response	1	100%	0.2	100%	4
Appropriate Response	4	67%	9.4	40%	4

---

[1] Quartile ranks show how your scores compare to those of your peers. In general a rank of 4 indicates better performance than a rank of 1 (see caveat and diagram, on opposite page).

A rank of "1" means your score fell between the 0th and 24th percentile, inclusive.
A rank of "2" means your score fell between the 25th and 49th percentile, inclusive.
A rank of "3" means your score fell between the 50th and 74th percentile, inclusive.
A rank of "4" means your score fell between the 75th and 99th percentile, inclusive.

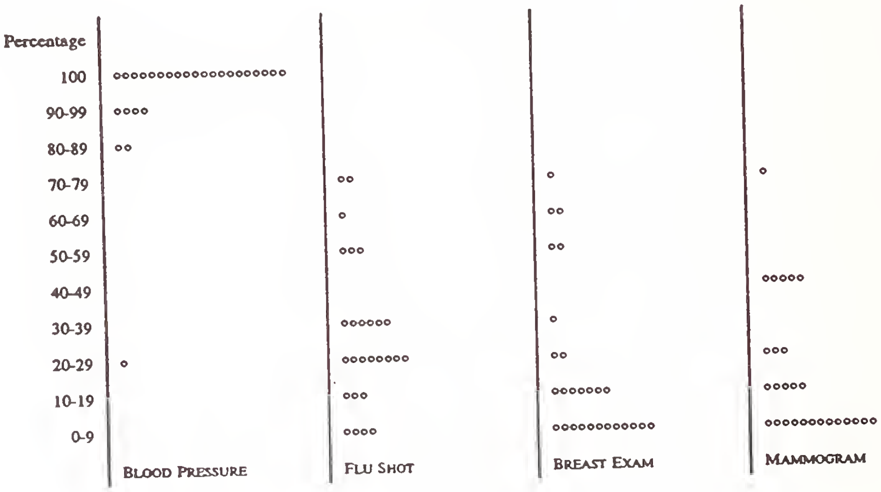
PREVENTION SUMMARY

The table on the opposite page summarizes performance on the four prevention indicators. The function is identified in both the title and above the top right hand corner of the table. The indicators associated with the function appear in the far left column. The remaining columns show your performance compared to that of your peer (specialty) group.[1]

The figure on this page shows the distribution of your peer group's scores for each indicator. Each dot represents a single physician. For example, if, on the right-hand page you see that you scored 87% for the Blood Pressure indicator, then you are represented by one of the dots in the 80-89% row of the Blood Pressure column. Find your Influenza Immunization performance rate on the opposite page and then locate the corresponding dot in the Influenza Immunization column on this page. The other dots in this column represent the performance of your peers.

Use this figure to help you interpret the quartile range shown on the opposite page. Usually performance in the 4th quartile may be considered better than performance in the 1st quartile. However, if the distribution of scores is tight, e.g. if most of the scores fall within a 20 percentage point range, then the differences in performance between the 1st and 4th quartiles may not be clinically important.

RATE OF ACCEPTABLE PERFORMANCE
GENERAL PRACTICE - PREVENTION



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[1] Only doctors who submitted records for the DEMPAQ review are included in the peer group rate. Your peer group was determined from the specialty code in the Medicare carrier provider file. If general practice was listed as your specialty on the provider file, you were assigned to the general practice peer group.

INDICATOR SUMMARY REPORT - Prevention
Review Period: July 1, 1989 - June 30, 1991

ID Number:
Peer Group: General Practice

PREVENTION

	Your Rates		Peer Group Rates		
Indicator	**Number of Patients**	**Percent Acceptable Performance**	**Average Number of Patients per Physician**	**Average Percent Acceptable Performance**	**Quartile[1] Rank**
Blood Pressure	16	100%	18.0	95%	4
Flu Vaccine	16	13%	17.9	30%	1
Mammogram	4	25%	5.9	18%	4
Breast Exam	9	78%	11.4	18%	4

---

[1] Quartile ranks show how your scores compare to those of your peers. In general a rank of 4 indicates better performance than a rank of 1 (see caveat and diagram, on opposite page).

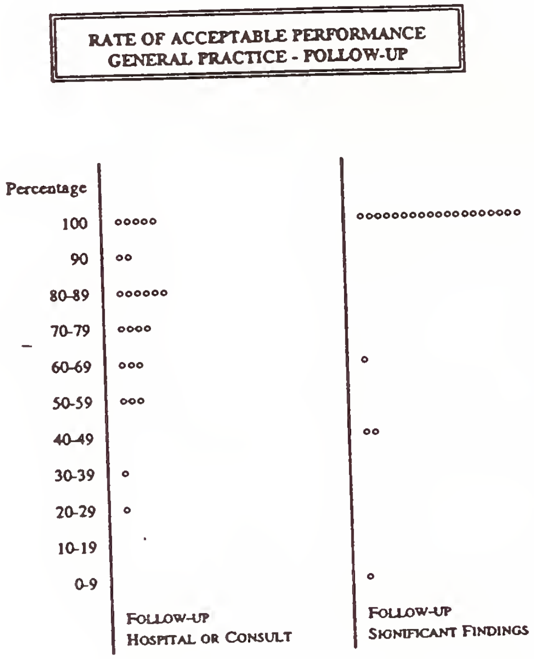
A rank of "1" means your score fell between the 0th and 24th percentile, inclusive.
A rank of "2" means your score fell between the 25th and 49th percentile, inclusive.
A rank of "3" means your score fell between the 50th and 74th percentile, inclusive.
A rank of "4" means your score fell between the 75th and 99th percentile, inclusive.

FOLLOW-UP INDICATOR SUMMARY

The table on the opposite page summarizes performance on the two follow-up indicators. The function is identified in both the title and above the top right hand corner of the table. The indicators associated with the function appear in the far left column. The remaining columns show your performance compared to that of your peer (specialty) group.[1]

The figure on this page shows the distribution of your peer group's scores for each indicator. Each dot represents a single physician. For example, if, on the right-hand page you see that you scored 87% for the Consult or Hospitalization indicator, then you are represented by one of the dots in the 80-89% row of the Consult or Hospitalization column. Find your Significant Finding performance rate on the opposite page and then locate the corresponding dot in the Significant Findings column on this page. The other dots in this column represent the performance of your peers.

Use this figure to help you interpret the quartile range shown on the opposite page. Usually performance in the 4th quartile may be considered better than performance in the 1st quartile. However, if the distribution of scores is tight, e.g. if most of the scores fall within a 20 percentage point range, then the differences in performance between the 1st and 4th quartiles may not be clinically important.



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[1] Only doctors who submitted records for the DEMPAQ review are included in the peer group rate. Your peer group was determined from the specialty code in the Medicare carrier provider file. If general practice was listed as your specialty on the provider file, you were assigned to the general practice peer group.

INDICATOR SUMMARY REPORT - Follow-up
Review Period: July 1, 1989 - June 30, 1991

ID Number:
Peer Group: General Practice

	Your Rates		Peer Group Rates		
Indicator	**Number of Visits**[1]	**Percent Acceptable Performance**	**Average Number of Visits**[1] **per Physician**	**Average Percent Acceptable Performance**	**Quartile**[2] **Rank**
Consult or Hospitalization	5	80%	5.7	76%	3
Significant Findings	4	100%	2.4	90%	4

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[1] Only visits reviewed for follow-up are included.

[2] Quartile ranks show how your scores compare to those of your peers. In general a rank of 4 indicates better performance than a rank of 1 (see caveat and diagram, on opposite page).

A rank of "1" means your score fell between the 0th and 24th percentile, inclusive.
A rank of "2" means your score fell between the 25th and 49th percentile, inclusive.
A rank of "3" means your score fell between the 50th and 74th percentile, inclusive.
A rank of "4" means your score fell between the 75th and 99th percentile, inclusive.

FUNCTION SUMMARY REPORTS

June 30, 1993

FUNCTION SUMMARY REPORT

The Function Summary Report presents a single table summarizing your performance on ***each*** function. Rates for individual indicators and different clinical items are combined within the function rate.

1. How to read the Function Summary Report

The dates covered by the review appear immediately below the title. The title of the table also appears above the table, on the right, a placement which makes it easy to find the table when flipping through the book.

COLUMN	DESCRIPTION
Function	Displays one of six functions reviewed by DEMPAQ.
Your Rates: Number	Shows the number of drugs, diagnoses, tests, patients or visits that were used to construct the rate shown in the next column.
Your Rates: Percent Acceptable Performance	Displays the "percent acceptable performance" rate on a function. See below for calculation details.
Peer Group Rates: Average Number	Shows the average number of drugs, diagnoses, tests, patients or visits ***per physician*** that were included in the rate shown in the next column.
Peer Group Rates: Average Percent Acceptable Performance	Presents the average percent acceptable performance rate for all physicians in your peer (specialty) group. See below for calculation details.
Quartile Rank	Displays a comparative statistic. All rates within your specialty for a particular function are divided into four equal groups: 1st (lowest) quartile: your score fell between the 0th and 24th percentile, inclusive 2nd quartile: your score fell between the 25th and 49th percentile, inclusive 3rd quartile: your score fell between the 50th and 74th percentile, inclusive 4th (highest) quartile: your score fell between the 75th and 99th percentile, inclusive

2. Interpreting the Function Summary

This report allows you to assess your overall performance on each clinical function. The table also gives you a good idea of the broad categories of clinical tasks you perform most frequently for your patients 65 and older. The average rates of physicians within your specialty who submitted records for DEMPAQ review are given so you can see how your performance compares to that of your peers. **Caution:** Rates based on small numbers of cases (fewer than 5) may not reflect your customary performance, because the small number gives a statistically unstable result.

The quartile rank presents another measure of comparison with your peers. Performance in the 4th quartile usually may be considered better than performance in the first quartile. **Caution:** If the distribution of scores is tight, e.g. if most of the scores fall within a 20 percentage point range (see diagrams on pages opposite the tables), then the differences in performance between the 1st and 4th quartiles may not be clinically important.

3. Calculating the Function Summary Rates

Figure one shows how the number of acceptable scores (MET + AA) are summed across all clinical items and indicators within a function and divided by the total number of scores for a patient (MET + AA + FLAG). This gives a patient level function performance rate.

Figure One

Function Summary Rates

For a Single Patient

	HTN	CHF	COPD	OA	Sum Across Items*	Number of Scores
Evidence for New Dx	NA	Flag	Met	NA	1	2
Treatable Cause	NA	Flag	Flag	NA	0	2
Old Dx Monitoring	0.62	NA	NA	0.75	1.37	2
Total					2.37	6
Patient Function Summary Rate					2.37/6=40%	

*Flag=0; Met and AA = 1

The patient level function summary rates are then averaged (see figure two). The denominator is the number of patients to whom the function applies. This method of calculating a summary rate ensures that no single patient will unduly influence the summary rate.

Figure Two

Diagnosis Function Summary Rates
For a Physician

	Patient Function Summary Rate
Patient 1	40%
Patient 2	50%
Patient 3	68%
Patient 4	NA
Physician Function Summary Rate	(40+50+68/3)=53%

4. Calculating peer group rates

Peer group rates are constructed by averaging individual physician performance rates, by specialty. Only doctors who submitted records for the DEMPAQ review are included in the peer group rate. Your peer group was determined from the specialty code in the Medicare carrier provider file. If general practice was listed as your specialty on the provider file, you were assigned to the general practice peer group.

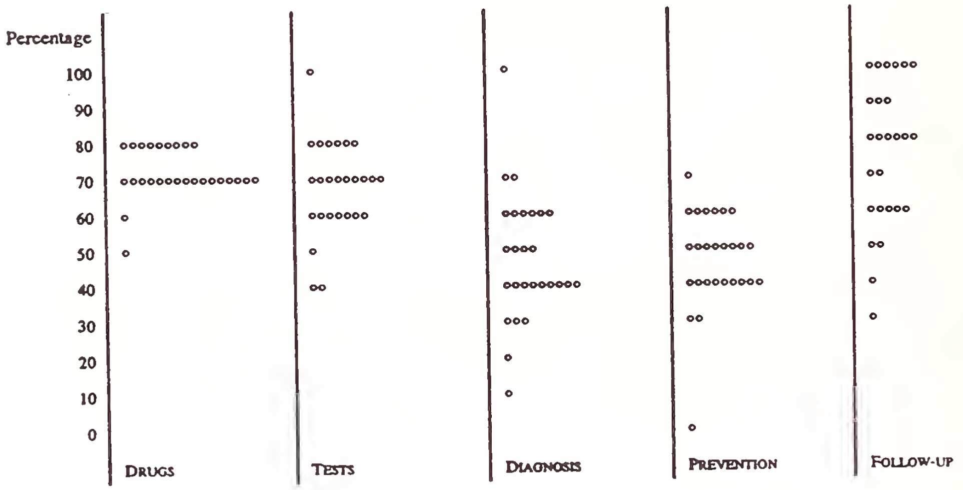
FUNCTION SUMMARY REPORT

The table on the opposite page summarizes performance on six of the DEMPAQ functions, shown in the left-hand column. The remaining columns show your performance compared to that of your peer (specialty) group.[1]

The figure on this page shows the distribution of your peer group's scores for each function. Each dot represents a single physician. For example, if, on the right-hand page you see that you scored 87% for the Diagnosis function, then you are represented by one of the dots in the 80-89% row of the Diagnosis column. Find your Drugs performance rate on the opposite page and then locate the corresponding dot in the Drugs column on this page. The other dots in this column represent the performance of your peers.

Use this figure to help you interpret the quartile range shown on the opposite page. Usually performance in the 4th quartile may be considered better than performance in the 1st quartile. However, if the distribution of scores is tight, e.g. if most of the scores fall within a 20 percentage point range, then the differences in performance between the 1st and 4th quartiles may not be clinically important.

RATE OF ACCEPTABLE PERFORMANCE
GENERAL PRACTICE



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[1] Only doctors who submitted records for the DEMPAQ review are included in the peer group rate. Your peer group was determined from the specialty code in the Medicare carrier provider file. If general practice was listed as your specialty on the provider file, you were assigned to the general practice peer group.

FUNCTION SUMMARY REPORT

Review Period: July 1, 1989 - June 30, 1991

ID Number:
Peer Group: General Practice

	Your Rates		Peer Group Rates		
Function	**Number of Items[1]**	**Percent Acceptable Performance**	**Average Number of Items[1] per Physician**	**Average Percent Acceptable Performance**	**Quartile[2] Rank**
Diagnosis	11	55%	19.9	51%	3
Tests	11	88%	14.5	72%	4
Drugs	49	75%	34.0	77%	2
Prevention	16	59%	18.0	50%	3
Follow-Up	9	83%	8.1	78%	3

---

[1] Number of diagnoses, drugs, and tests. For preventive services, the N equals the number of patients. For follow-up, the N is the number of visits for which follow-up was indicated.

[2] Quartile ranks show how your scores compare to those of your peers. In general a rank of 4 indicates better performance than a rank of 1 (see caveat and diagram on the opposite page.

A rank of 1 means your score fell between the 0th and 24th percentile, inclusive.
A rank of 2 means your score fell between the 25th and 49th percentile, inclusive.
A rank of 3 means your score fell between the 50th and 74th percentile, inclusive.
A rank of 4 means your score fell between the 75th and 99th percentile, inclusive.

RECORD DOCUMENTATION ASSESSMENT

June 30, 1993

RECORD DOCUMENTATION ASSESSMENT

The Record Documentation Assessment presents a single table summarizing your performance on six categories of record documentation: date, subjective, objective assessment, plan and clinician id.

1. How to read the Record Documentation Assessment Table

The dates covered by the review appear immediately below the title. The title of the table also appears above the table, on the right, a placement which makes it easy to find the table when flipping through the book.

COLUMN	DESCRIPTION
Documentation Category	Displays one of the six of documentation categories evaluated by DEMPAQ and give the overall documentation score.
Your Scores: Number of Visits Reviewed	Shows the number of visits used to construct the rate displayed in the next column. Each patient had at least the first and last two visits evaluated for quality of documentation.
Your Scores: Average Documentation Score	Displays the average level of documentation for each of the categories. Documentation ranges from 0 (none) to 3 (adequate).
Peer Group Scores: Average Number of Visits Reviewed	Shows the average number of visits reviewed for documentation, ***per physician***.
Peer Group Rates: Average Percent Acceptable Performance	Presents the average level of documentation for each of the six categories.
Quartile Rank	Displays a comparative statistic. All rates within your specialty for a particular indicator are divided into four equal groups: 1st (lowest) quartile: your score fell between the 0th and 24th percentile, inclusive 2nd quartile: your score fell between the 25th and 49th percentile, inclusive 3rd quartile: your score fell between the 50th and 74th percentile, inclusive 4th (highest) quartile: your score fell between the 75th and 99th percentile, inclusive

2. Interpreting the Record Documentation Assessment

This report allows you to assess your average level of documentation on six different types of documentation. Complete documentation enhances not only the continuity of medical care for a patient but also provides some legal protection. A low (close to zero) score on a particular type of documentation indicates the need for improved record keeping in that area. The average rates of physicians within your specialty who submitted records for DEMPAQ review are given so you can see how your performance compares to that of your peers.[1] **Caution:** Rates based on small numbers of cases (fewer than 5) may not reflect your customary performance, because the small number gives a statistically unstable result.

The quartile rank presents another measure of comparison with your peers. Performance in the 4th quartile usually may be considered better than performance in the first quartile. **Caution:** If the distribution of scores is tight, e.g. if most of the scores fall within a 20 percentage point range (see diagrams on pages opposite the tables), then the differences in performance between the 1st and 4th quartiles may not be clinically important.

3. Calculating the Record Documentation Rates

The quality of record documentation is evaluated on a four point scale: 0 = no documentation, 1 = illegible documentation, 2 = minimal documentation, and 3 = adequate documentation. An average documentation score is calculated for each patient.

Figure One

Record Documentation Rates

For a Single Patient

	Visit 1	Visit 2	Visit 8	Visit 9	Rate
Date	3	3	3	3	12/4=3.0
Subjective	3	3	2	3	11/4=2.75
Objective	3	3	3	3	12/4=3.0
Assessment	2	3	3	3	11/4=2.75
Plan	3	3	3	3	12/4=3.0
Clinician ID	1	1	3	3	8/4 =2.0

---

[1] Only doctors who submitted records for the DEMPAQ review are included in the peer group rate. Your peer group was determined from the specialty code in the Medicare carrier provider file. If general practice was listed as your specialty on the provider file, you were assigned to the general practice peer group.

Scores are then averaged across all patients to create a summary score describing a physician's average level of documentation. Scores close to zero indicate poor documentation, while scores close to 3 indicate adequate documentation.

Figure Two

Record Documentation Rates

For a Physician

	Patient 1	Patient 2	Patient 3	Patient 4	Rate
Date	3.0	3.0	3.0	3.0	12/4 = 3.0
Subjective	2.75	1.75	2.5	3.0	10/4 = 2.5
Objective	3.0	1.5	2.25	2.75	9.5/4 = 2.4
Assessment	2.75	1.75	2.75	2.75	10/4 = 2.5
Plan	3.0	2.0	3.0	2.75	10.75/4 = 2.7
Clinician ID	2.0	1.0	1.0	1.0	5/4 = 1.25

4. Calculating peer group rates

Peer group rates are constructed by averaging individual physician performance rates, by specialty. Only doctors who submitted records for the DEMPAQ review are included in the peer group rate. Your peer group was determined from the specialty code in the Medicare carrier provider file. If general practice was listed as your specialty on the provider file, you were assigned to the general practice peer group.

RECORD DOCUMENTATION REPORT

The table on the opposite page summarizes performance on the six record documentation measures and a summary measure. First left-hand column shows the measures. The remaining columns show your performance compared to that of your peer (specialty) group.[1]

The figure on this page shows the distribution of your peer group's scores for each measure. Each dot represents a single physician. For example, if, on the right-hand page you see that you scored 87% for the Subjective measure, then you are represented by one of the dots in the 80-89% row of the Subjective column. Find your Plan performance rate on the opposite page and then locate the corresponding dot in the Plan column on this page. The other dots in this column represent the performance of your peers.

Use this figure to help you interpret the quartile range shown on the opposite page. Usually performance in the 4th quartile may be considered better than performance in the 1st quartile. However, if the distribution of scores is tight, e.g. if most of the scores fall within a 20 percentage point range, then the differences in performance between the 1st and 4th quartiles may not be clinically important.

RATE OF ACCEPTABLE PERFORMANCE
GENERAL PRACTICE - DOCUMENTATION

Percentage	SUBJECTIVE	OBJECTIVE	ASSESSMENT	PLAN
3			o	
2.5-2.9	oooo	ooooooo	oooooooooo	ooooo
2.0-2.4	ooooooooooooooooo	oooooooooooooo	oooo	oooooooooooooooooo
1.5-1.9	oo	oooooo	ooooo	ooo
1.0-1.4	oooo		ooo	o
0.5-0.9			ooo	
0-0.4			o	

---

[1] Only doctors who submitted records for the DEMPAQ review are included in the peer group rate. Your peer group was determined from the specialty code in the Medicare carrier provider file. If general practice was listed as your specialty on the provider file, you were assigned to the general practice peer group.

RECORD DOCUMENTATION ASSESSMENT REPORT

Review Period: July 1, 1989 - June 30, 1991

ID Number:
Peer Group: General Practice

Documentation Category	Your Documentation		Peer Group Documentation		Quartile Rank[2]
	Number of Visits Evaluated	Average Documentation Score[1]	Average Number of Visits Evaluated per Physician	Average Documentation Score	
Date	81	3	92.8	3	4
Subjective	80	2	92.7	2	4
Objective	81	2	92.7	2	4
Assessment	81	0	92.7	1	1
Plan	81	2	92.7	2	3
ID	81	0	92.6	1	1
Overall	81	11	92.8	12	2

---

[1] On a scale of 1 to 3

[2] Quartile ranks show how your scores compare to those of your peers. In general a rank of 4 is better than a rank of 1(see caveat on opposite page).

A rank of 1 means your score fell between the 0th and 24th percentile, inclusive.
A rank of 2 means your score fell between the 25th and 49th percentile, inclusive.
A rank of 3 means your score fell between the 50th and 74th percentile, inclusive.
A rank of 4 means your score fell between the 75th and 99th percentile, inclusive.

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